THE

AMERICAN REVIEW OF TUBERCULOSIS

ABSTRACTS OF TUBERCULOSIS

VOLUME V MAY, 1921 ABST. NO. 2

Abstracts of Tuberculosis *is published at intervals as an integral part of the* **American Review of Tuberculosis.** *It will receive separate paging and may, if desired, be bound separately at the completion of the volume.*

The Abstract Editor is Dr. George Mannheimer, 41 West 51st Street, New York City. Prompt transmission to him of reprints or abstracts of papers on tuberculosis, sanatorium or board of health reports, etc., will promote their early publication in this section.

Abstracts should be sent typewritten on one side of the page only. They should be as concise and compact as the subject matter of the article warrants. They should be headed with a short title, and followed by the full title of the paper, author's name, journal, date, volume and page.

Editor's Note: See p. 142, January, 1921. Review, *vol. iv, no. 11, Abstract Section. There is here printed verbatim an editorial from the* Medical Record, *November 20, 1920, xcviii, 862, entitled The Kidney in Pulmonary Tuberculosis. Although the author's name is not mentioned this editorial is a literal translation of the Conclusions of a very meritorious thesis by Dr. M. L. Kindberg on Études sur le rein des tuberculeux, Paris, G. Steinheil, 1913. We take pleasure in acknowledging its source, which has been brought to our attention by Dr. Kindberg.*

Mercury Compounds in the Chemotherapy of Experimental Tuberculosis.—This report concerns the bacteriostatic and therapeutic effect of 24 inorganic and organic compounds of mercury on the human tubercle bacillus and on experimental tuberculosis in guinea pigs. All the compounds showed some inhibitory power, nearly all inhibited growth completely at 1:10,000, many also inhibited at 1:20,000. In allyl alcohol mercuric acetate, double salt of methylene blue and mercuric chloride and l-amino, 2 (paranaphthalin azopenyl mercuric acetate) 5 sulphonic acid, the bacteriostatic action went further than 1:20,000. As to the chemotherapeutic experiments, as compared with the untreated controls that had been inoculated with the same dose of the same strain of tubercle bacilli, several treated guinea pigs showed a greater duration of life and less extent of disease. The drugs producing this action were methylene blue and mercuric chloride, mercurous chloride, mercury potassium cyanide, mercuric succinimide, mercury phenolphthalein, methylene green and mercuric chloride, diazo amino methylene blue o-phenol mercuric chloride. In nearly all of the animals tested, the infection was due to a strain of low virulence, and when the same drug was tested with a strain of high virulence no effect was noticed. Only in the case of a set of animals treated with the double salt of methylene blue and mercuric chloride and with a set treated with diazo amino methylene blue o-phenol mercuric chloride has there been a similar beneficial effect on animals inoculated with a virulent strain, and the effect of none of these drugs was such that the disease could be called cured. Since the guinea pig is far more susceptible to tuberculosis than is the human being and responds to infection with a more rapidly progressive and fatal disease than does man, a drug that has a decided beneficial effect in the guinea pig would probably have a much greater effect in man.—*Mercury Compounds in the Chemotherapy of Experimental Tuberculosis in Guinea Pigs. I, Studies on the Biochemistry and Chemotherapy of Tuberculosis. XXI, Lydia M. DeWitt, J. Infect. Dis., February, 1921, xxviii, 150.*

Light Therapeutic Studies with Furstenau's Actinometer.—On the ground that X-rays are wave lengths of light which can be measured, Fürstenau was led to study selenium cells as a means of measuring quartz light radiations. He finally brought forth his actinometer. The methods of Bordier, Stumpke and Bering and Meyer are too difficult to employ in daily practice. The variations in light emitted from a Bach's alternating current mercury quartz light with and without resistance coils are shown, demonstrating how necessary it is to carefully measure the intensity. Graphic charts are required to show accurate results. Differences of 300 per cent during the burning period of one hour were shown for similar burners. The amount absorbed by various films can also be studied. The uviol film was seen to absorb 30 to 40 per cent. Further studies are being made, especially in regard to the amount of warmth in lamps which varies a good deal in the same type. It seemed best to eliminate the rheostat resistance in order to take advantage of the greatest amount of electrical energy; however it is best to correspondingly increase the distance of the source of light from the patient. With Bach's "Höhensonne" and its reflectors, the law that the light intensity varies inversely with the square of the distance does not hold. A lamp with an old burner showed only one-half the intensity that it did with a new burner. The apparatus opens up a large field for study.—*Lichttherapeutische Studien mit dem Fürstenau-Aktinimeter, F. Meyer, Münch. med. Wchnschr., December 3, 1920, xlix, 1410.*

The Quartz Laryngeal Mirror.—The ultraviolet rays seem to be the most important for therapeutic use in laryngitis; the greatest possible intensity is desired. With glass laryngeal mirrors marked absorption and loss occur, both for the incident and reflected light. With quartz, practically none is lost, due to the absence of absorbing power. It is to be preferred for other reasons also: it does not oxidize as metallic mirrors do, is not destroyed so soon, resists boiling and is therefore easily sterilized and not quickly scratched. This quartz mirror needs little protection as the quartz is ceramically united to the mirror deposit; the quartz can if necessary be surrounded by only a closed ring without any use of screws. In addition to this, the physician can add ultraviolet rays by reflecting with a quartz head-mirror, into the pharynx and larynx. Noll's mouth adjuster is also a good addition.—*Der Quarz-Kehlkopfspiegel, H. Ladebeck, Münch. med. Wchnschr., December 10, 1920, l, 1442.*

Radiating the Larynx with Ultraviolet Rays.—The healing power of sunlight is probably due chiefly to the ultraviolet rays. The effect of these in strong dosage upon the larynx is so far not properly shown because of the lack of suitable apparatus. The quartz lamps of Bach, Kromayer and Jesionek furnish powerful ultraviolet radiation. The apparatus here offered allows easy application without the need of the patient holding the mirror, after it is once properly adjusted; the doctor's hands are also free. It consists of an adjustable mouthpiece to keep the mouth widely open and an additional holder to grasp the steel end of the laryngeal mirror. The physician fixes the apparatus so that the mirror is properly placed over the larynx and the rest is left to the patient. With ball-valve joints, most parts are freely movable. The use of Bach's quartz lamp with this is not very simple but is yet possible. It is better to use Ladebeck's quartz mirror in place of the ordinary glass laryngeal mirror. Therapeutic technic will be considered later.—*Ein neuer Kehlkopfbestrahler zur Behandlung mit ultravioletlem Lichte, F. Noll, Münch. med. Wchnschr., December 10, 1920, l, 1441.*

Dosable Light Therapy.—Just as in roentgen ray therapy, so with light, one of the most important considerations is exact dosage. Thus far, without any suitable, easily handled apparatus, light treatment is carried out in a most unsatisfactory way. No accurate comparisons between various workers and their sources of light and their results can be made. As a result of long study, in conjunction with a co-worker, Eppens, this actinometer was constructed. It consists of two parts, the first being a receiving apparatus to catch the light rays, this joined by a connecting wire of over a metre in length, with the second part, a measuring instrument with indicators and a scale. The whole is placed on a support against the wall. The receiver, containing light-susceptible selenium cells is opened by a valve arrangement to receive the light rays. The light rays change the electrical resistance of the selenium cells, and the amount of this change is determined by the quantity of the affecting light. In turn, as a result of this change, the measuring instrument records the effect in light units. The opening of the receiver to the rays of light is immediately registered on the scale. The empirical unit has direct biological relationship with the amount of light that has been shown to produce changes such as erythema, etc., on patients. By this means, light should be able to be dosed properly and will

then assume a firmer basis.—*Dosierbare Lichttherapie, R. Fürstenau, Deutsche med. Wchnschr., December 2, 1920, xlix, 1362.*

The Treatment of Surgical Tuberculosis with X-ray.—There is very little uniformity of opinion in regard to X-ray treatment except in relation to the results in glandular tuberculosis. In the other types, authors are for or against it according to their past experience. The cases were not selected but all types of surgical tuberculosis were radiated and no doubtful ones were reported upon. The healed cases were termed so, only if they showed no pathologic subjective or objective findings. Of 57 healed cases, there were 50 or 89 per cent which were afterward studied for a period of four years after discharge. The author decided to use the smallest doses possible and have large intervals between. No general rule could be followed but it was necessary to individualize by noting the effect of the first dose. If abscesses were present at the start, they were punctured and often filled with iodoform in glycerin before they were radiated. The organization resulting from treatment should go hand in hand with the slight softening that must result. The effect of the radiation through irritation is to stimulate scar tissue. The action of X-rays was carefully studied by roentgen pictures. In this way foci, which were formerly indistinctly outlined, gradually assumed a sharp demarcation. The granulation tissue disappeared promptly, but the filling in of bone spaces might take years. The radiation seemed to act favorably on bone disease; of 23 cases of joint tuberculosis 13 healed completely with return of function, three with a slight loss of function and seven with ankylosis. Together with radiation, constitutional treatment was carried out. Artificial light was also employed but was not considered as favorable as sunlight. It was most important to carry out exact orthopedic principles. Extension bandages served an important function. The technic used was exposure at a distance of 26 mm. with aluminum filters of from 1 to 4 mm. thickness. The dose was 5 X of a ten-minute exposure at intervals of three to four weeks, but this was varied according to the type of disease, exposure going up as high as 25 X. Conclusions: In glandular tuberculosis, excellent results were obtained almost without exception. No operative procedures are necessary except an occasional puncture. Investigations covering thirty-seven and a half months after exposures show only 1 case with a residue. The radiations covered a period of over six months. Twenty-three hip joints were radiated, 14 of which were closed, and 13 healed. Of those with tuberculosis of the foot, only 50 per cent recovered. With elbow joints very favorable results were had, only 1 case out of 6 resisting treatment. Results were still better in disease of the joints of the hand in which all 5 cases healed. One case of sternal and spinal tuberculosis and 4 of peritoneal tuberculosis with disease of caecum healed completely. Of 40 joint cases, 33 or 82 per cent recovered. Still X-ray treatment is only an adjuvant; general constitutional treatment has to be carried out most carefully, Best results are had with children. Adults are not so favorable. X-ray radiations give better results than operation except in older patients in whom the prognosis is very doubtful.—*Über die Behandlung der chirurgischen Tuberkulose mit Röntgenstrahlen, K. Stromeyer, Deutsche med. Wchnschr., May, 1920, 514, 542.*

Heliotherapy in Surgical Tuberculosis.—Negri does not hesitate to assert from his six years of experience that surgical tuberculosis can be cured in all its forms, at every stage and at all ages with heliotherapy. He is not so affirmative in regard to visceral tuberculosis, but cites a number of remarkably successful cases from his own and Rollier's experience. Success is especially frequent in tuberculous peritonitis. In one case of tuberculous adnexitis the local and general condition improved notably during a three months' course of heliotherapy, notwithstanding a coexistent respiratory tuberculosis. But in this, as also in a case showing great improvement of a tuberculous urinary process, the patients would not wait to complete the course. He refers further to Rollier's success with tuberculosis of the testicles, adding that the practically invariable involvement of the seminal vesicles and prostate forbids surgical treatment. While all physicians admit theoretically the usefulness of heliotherapy for so called bone and joint tuberculosis, yet comparatively few insist upon it for their patients, and still fewer apply it. It is not enough to order the patient to take sunbaths. The course must be systematically planned and applied, and for this Negri urges multiplication of inexpensive institutions for the regular application of heliotherapy. His own work was done in the Novara foothill district in northern Italy.—*Elioterapia e tubercolosi chirurgiche, L. Negri, Policlin., November 15, 1920, xxvii, Surg. Sect. No. 11, 352.*

Radium Treatment of Tuberculous Adenitis.—Radium is not to be advocated as displacing surgery but its adoption is encouraged wherever indicated. Of 32 cases treated during four years 27 were arrested and apparently cured, 3 disappeared

and 2 showed recurrence. One died two years after treatment from pulmonary tuberculosis. Following a massive application of radium over an area of infected glands, a general average dosage being 200 mgm. for twenty-four to thirty hours, the improvement is marked. As a rule the masses do not completely disappear, but they become inactive and reduced to small dense nodules. Sinus formations are successfully treated by advancing a tube of radium well up into the top of the sinus. Three cases are reported where the radium treatment has been successfully employed in tuberculous adenitis in adults.—*Radium Treatment of Tuberculous Adenitis, C. E. Field, Long Island M. J., November, 1920, xiv, 424.*

Mechanical Treatment of Tuberculosis.—The following types are suitable for pneumothorax treatment: Cases of severe, massive hemoptyses where it is definitely known from which lung the hemorrhage arises, cases of small or moderate hemoptyses recurring in spite of all less radical measures, unilateral active ulcerative lesions which, regardless of rigid rest and the proper dietetic-hygienic regimen, progress steadily. Contraindications are bilateral active processes, the simultaneous presence of severe disease of the cardiovascular-renal system, diabetes and active intestinal tuberculosis. The gases used are nitrogen, oxygen and sterile atmospheric air. The operation itself is comparatively simple. Strict asepsis is essential. Under carefully applied local analgesia no suffering and little inconvenience need be experienced by the patient. The site for injection favored by most workers is in the fifth or sixth interspace in the anterior axillary line. Except in cases of severe hemoptysis where large quantities (1200 to 1500 cc.) of air may be used to effect speedy complete compression, a course of treatment is ordinarily initiated by the employment of small quantities of air, 200 to 300 cc. to begin with, followed by 300 to 500 cc. two days later. The refills may be spaced from one to four weeks apart depending on the rapidity of absorption of the air. Clinical recovery long precedes complete anatomic recovery. Most workers agree that at least two years are needed; some cases require a much longer period, depending upon the extent and type of lesion, the patient's general responsive powers, and his reaction to environmental and occupational stimuli. If after two years a patient is able to do one-half day's work and remains free from clinical evidence of activity, structural cure has been realized and the lung is permitted to reëxpand. The general results of pneumothorax therapy are encouraging. The lives of patients have in many instances been greatly prolonged; a fair percentage have been restored to usefulness; a small percentage have become apparently permanently cured. Yet these are all cases which would otherwise most likely have proceeded to fatal termination.—*The Mechanical Treatment of Tuberculosis, F. Murray, Long Island M. J., November, 1920, xiv, 417.*

Postural Rest for Pulmonary Tuberculosis.—Excellent results have been obtained in more than 200 patients with tuberculosis who were subjected to postural rest as a means of treatment. At the same time, so little attention has been given to the subject by those who specialize in pulmonary tuberculosis, that the authors feel warranted in again discussing this subject. The failures encountered have been in patients either too far advanced with bilateral disease, or in those considered favorable for the application of this procedure, but who failed to carry it out faithfully. Pulmonary tuberculosis is usually in its early phase a disease of the upper lobes, and the movement of these lobes is easily controlled by postural rest. As a matter of practical experience, it has not been noted that postural rest, with the preliminary increased excursion of the diaphragm, brings any disaster to patients when the disease has involved the lower lobe. Usually when such a phase of the disease is reached, pleural adhesions are likely to prevail, and these possibly modify the motion of the diaphragm. In the normal person there is little hyperemia of the dependent lung during sleep. In a tuberculous patient, a moderate degree of hyperemia is produced by prolonged rest on the affected side. Certainly such prolonged rest does naturally assist in the moving over of the heart and of the mediastinum to the side of the more diseased and dependent lung. In patients with much expectoration, a short time several times a day is allowed to be spent lying on the less affected lung. This accelerates drainage. The patient then turns on the side of the more diseased organ, beginning with only a few minutes and gradually increasing the time until twenty hours or more a day are spent lying in this position. A small pillow is often placed under the ribs to increase the splinting effect. Results are obtained in a few weeks by the application of this thorough rest which are comparable to those obtained more quickly by artificial pneumothorax. Fever will subside, cough will cease, and sputum of many ounces may decrease to a mere trace. It has been of special interest to note the decrease and at times almost complete disappearance of râles. Many patients, considered as cer-

tainly requiring the application of artificial pneumothorax, have been restored to health by this simple procedure.—*Postural Rest for Pulmonary Tuberculosis, G. B. Webb, A. M. Forster & G. B. Gilbert, J. Am. M. Ass., March 26, 1921, lxxvi, 846.*

Multiple Fluid Collections in Therapeutic Pneumothorax.—Careful observation of 32 cases of hydropneumothorax disclosed the presence of multiple fluid collections in 5 cases. This condition could not be detected without the aid of the X-ray, which showed characteristic multiple fluid levels. Two or more independent hydropneumothorax pockets may be produced as a result of attempts to induce pneumothorax at different levels of the chest or a localized spontaneous pneumothorax may occur adjacent to a pocket of artificial hydropneumothorax. This condition is most commonly caused by pleuritic adhesions which spread out in hammock-like fashion from the visceral pleura across the pneumothorax area to the chest wall. These adhesions may be present before the induction of the pneumothorax and may occasionally be the result of a thickened interlobar septum, or they may be newly formed as a result of organization of the exudate. The coexistence of a fluid-containing cavity with a hydropneumothorax may also give rise to multiple fluid levels.—*Multiple Fluid Collection in the Chest in the Course of Therapeutic Pneumothorax, B. Stivelman and J. Rosenblatt, Am. J. M. Sci., February, 1921, clxi, 229.*

Therapeutic Pneumothorax in Exudative Pleurisy.—In summarizing the advantages of therapeutic pneumothorax in exudative pleurisy, the author emphasizes the following points: 1. It is possible to get rid of all the accumulated liquid. 2. There is a tendency to rapid healing, and there is seldom a renewal of the exudative process. 3. The formation of new adhesions and any extension of existing ones are prevented. 4. Pain due to the contact of the two inflamed surfaces is relieved by their separation by gas. 5. Thoracic shrinkage is counteracted. 6. The danger of rapid decompression is minimized. 7. Laceration of the pulmonary parenchyma, even in advanced cases, is made less likely. 8. Concomitant tuberculous lesions can be arrested. 9. The pneumothorax assists in diagnosis and prognosis. —*Il pneumotorace terapeutico nelle pleuriti essudative, V. Rustichelli, Tubercolosi, October, 1920, xii, 301.*

Bilateral Artificial Pneumothorax.—Bilateral artificial pneumothorax can effectively cure pulmonary tuberculosis. The healed lung may reëxpand and resume its normal function. The pleura may remain pervious to the same extent as before treatment, notwithstanding a long period of compression. Thus, it is possible to renew the treatment in case of a relapse. A pneumothorax may be induced in the other lung, if a lesion should eventually break out there. —*Pneumotorace artificiale consecutivamente bilaterale, G. Feldman, Tubercolosi, August, 1920, xii, 229.*

Treatment of Early Pulmonary Tuberculosis.—Pulmonary tuberculosis should not be accepted as the final diagnosis to the exclusion of all others. Other conditions may be present and must be corrected, such as diseased tonsils, obstructed nostrils, bad teeth, pelvic disorders, chronic appendicitis and gastrointestinal disturbances. Marcley emphasizes the need of medical supervision and an intelligent coöperation on the part of the patient. Open air while of prime importance is to be considered only in connection with the other elements of treatment. Change of climate has psychic as well as physiological effect. A low altitude and a long cold winter may require special consideration with some patients. The early cases as a rule do best in a rigorous climate. The importance of rest cannot be emphasized too strongly. It is impossible to lay down any rule for rest or exercise in all cases. Patients who are put to bed having only slight rise in temperature and pulse rate are allowed to walk to the toilet and to sit up for meals. Exercise is to be dosed out cautiously. On a well-balanced nutritious diet the patient makes slow gradual gain back to his normal weight. Hydrotherapy should be carefully suited to each individual. Tuberculin in selected cases if properly given proves beneficial. The treatment of tuberculosis in childhood requires a longer period of watchfulness after apparent recovery. The sanatorium is the place par excellence where the treatment should be taken, and where the patient should remain long enough to become accustomed to the routine so that he can continue the treatment after discharge from the institution under home supervision.—*Treatment of Early Pulmonary Tuberculosis, W. J. Marcley, Minnesota Med., February, 1921, iv, 96.*

The Care of Moderately Advanced Pulmonary Tuberculosis.—A hospital for tuberculous patients may be so placed within or near our cities as to insure comparative freedom from contamination of our densely populated centers and yet not so far removed that the frequent visits of relatives and friends become a hardship. This social in-

tercourse is an important element in maintaining the morale of these patients. For ward beds, semiprivate and private rooms with nursing, medication and medical services in a private hospital as described by the author, terms range from nothing to $30 per week. The number of people suffering from pulmonary tuberculosis is being steadily reduced. A hospital for moderately advanced or far advanced patients has a large field of usefulness apart from that of the sanatorium. Symptomatic treatment and artificial pneumothorax when used persistently and intelligently are of great help to the patient.—*The Care of the Patient with Moderately Advanced Pulmonary Tuberculosis, T. A. McGoldrick, Long Island M. J. November, 1920, xiv,* 427.

The Treatment of Grave Cases of Pulmonary Tuberculosis with Partial Antigens.—Conclusions: 1. Partigentherapy may favorably influence the course of the disease even in severe cases as evidenced by the general amelioration of the condition, of physical signs in the lungs, loss of fever and increase in weight. 2. In the more difficult cases the intracutaneous method should be used. 3. The intracutaneous reaction gives many valuable indications of the progress of the disease while under treatment but should be considered only in conjunction with the clinical findings.—*Die Behandlung schwererer Fälle von Lungentuberkulose mit den Deycke-Muchschen Partial-Antigenen und die Bedeutung der Immunitäts-Analyse bei der Behandlung derselben, H. Schults-Tigges, Ztschr. f. Tuberk., October, 1920, xxxiii, 26.*

Sanatoria for Surgical Tuberculosis.—Since the war, tuberculosis has been on the increase in Switzerland, as it has in other countries, but the antituberculous work done so far has been almost exclusively directed against pulmonary tuberculosis. While eleven Swiss cantons possess each an establishment destined for the treatment of pulmonary cases, there exists at present only one altitude sanatorium for surgical tuberculosis, namely, the one that was put up two years ago at Leysin by the Vaudoise Antituberculosis League, and nevertheless, according to the statistics of de Quervain and Hunziker, there are no less than 3000 surgical tuberculosis cases per annum in Switzerland. This is evidently a great social injustice that should now be rectified and this has been undertaken by Prof. de Quervain of Berne and Dr. Rollier of Leysin. Since surgical tuberculosis is, like the pulmonary process, a disease in which the question of soil plays an active part, it is essential to place these patients in the best possible conditions for defense of the organism. An experience of twenty or more years has allowed both Bernhard and Rollier to prove that a mountain suncure fulfills these conditions perfectly, because it affords the most efficacious general treatment, while heliotherapy, combined with rational orthopedic treatment, is for many cases the best local treatment. Switzerland, with its numerous Alpine and subalpine resorts, is better placed than many other countries for organizing an antituberculosis fight for surgical cases of this affection. The advantage of mountain resorts resides in the fact that solar radiation is there most intense and continuous and patients can benefit from the sun during the entire year, an essential factor in the cure. The ideal solution would be that each canton should have its own sanatorium for surgical tuberculosis in a chosen altitude resort. In the case of small cantons several might use the same establishment. It is not a question of building luxurious installations, as at present the cost makes any such undertakings out of the question, but while waiting for better times to come, it is possible to use already existing hotels that have been little frequented since the war and which could be bought or leased under advantageous conditions, and could be altered over into hospitals. The experience gained by the free clinics at Leysin shows that such a transformation is easy to realize. It is important that the sanatoriums for surgical tuberculosis should be independent of those for pulmonary tuberculosis already in existence. The treatment of the surgical cases requires special medical knowledge, not only of heliotherapy but also radiodiagnosis, radiotherapy, orthopedics, and conservative surgery, all of which are precious adjuvants to the solar cure. An organization for occupational cure must be carried out in these establishments. Experience gained in this domain among the Swiss tuberculous soldiers quartered at Leysin allows one to conclude this is a therapeutic, physical, and moral factor of the first importance. It has also the advantage of giving patients the faculty of partially helping toward the cost of their treatment.

In order to maintain and consolidate the cure of tuberculous subjects, it is necessary that when once recovered, they should live in good hygienic conditions. By creating in the plains agricultural, market-gardening, and wine-growing colonies for convalescents, the latter can avoid returning to trades, often unhealthy, or returning to insanitary lodgings. Thus, it may be possible to solve the double social problem: on the one hand, to prevent recurrences, on the other to furnish the nation with labor, which has become pro-

gressively scarcer on account of the movement from the country to cities. In order to solve the financial side of the problem, a popular movement will be started in favor of patients with surgical tuberculosis. An appeal to the good sense of the Swiss people will not fall on deaf ears, and the funds collected will be placed at the disposal of the cantonal leagues. The above propositions propounded by de Quervain and Rollier are being examined by the Swiss Association for Tuberculosis and will undoubtedly be favorably acted on. Although the treatment of already existing surgical tuberculosis appears as an urgent necessity, it is no less important and certainly easier, to organize a prophylactic fight against these affections. Like pulmonary tuberculosis, the surgical forms almost invariably follow a tracheobronchial adenopathy—this first manifestation of tuberculous infection in childhood, so that it is important to arrest further progress of the disease by placing children in the most favorable conditions for organic resistance. This can be accomplished by the introduction of reforms in the hygiene of tenements and schools, in which a larger place should be given for the physical development of the children—schools built in the open and freely exposed to the sun. Such is the present program which is under consideration.—*Letter from Geneva, Med. Rec., February 26, 1921, xcix, 362.*

Results of Surgical Treatment of Pulmonary Tuberculosis.—Quoting from Sauerbruch, Naegeli states that of 381 patients operated on, 134, or 35 per cent, have been cured to the extent that for at least a year and a half after the operation they have been free from fever, present negative sputum and are able to perform their regular daily work. They were for the most part severe cases, resistant to internal, dietetic treatment for many years, cases that on account of large cavities and copious expectoration were especially dangerous as sources of infection. Naegeli reviews the outcome with the various methods of surgical treatment employed in recent years—among others, artificial pneumothorax; extrapleural thoracoplasty, which is to be considered if adhesions make artificial pneumothorax impossible; paravertebral resection (Sauerbruch), which consists of a more or less extensive resection of the first to the eleventh rib; filling the lung cavities with paraffin (Baer); resection of the cartilage of the uppermost ribs on the ground that ossification of this cartilage has brought about a narrowing of the upper thorax aperture (Freund); and other methods of less established value. The results of surgical treatment of pulmonary tuberculosis (which, of course, is indicated only if other measures have been persistently tried and have failed) have been very gratifying.—*Die chirurgische Behandlung der Lungentuberkulose, T. Naegeli, Therapeut. Halbmonatsh., September, 1, 1920, xxxiv, 461.*

Intracutaneous Tuberculin Treatment.—Sahli inaugurated the multiple inoculation of tuberculin with his *Nadelschnepper*, and states that this is proving in many hands a convenient and effectual method for tuberculin treatment. The large number of pricks multiplies the areas for absorption, while patients do not shrink as much from it as from a subcutaneous injection. But he now prefers intracutaneous injection of tuberculin as an improvement over all other methods. This allows greater precision in the dose, and the local reaction to the tuberculin generates local production of antibodies, which aid in immunizing. It has further the advantage that the local reaction is an index of the degree of immunization that has been realized and a guide to the dose of tuberculin to use to avoid injurious effects, as the skin seems to be far more sensitive to tuberculin than all other tissues. He emphasizes that intracutaneous tuberculin treatment and prophylaxis belong to the general practitioner, as he sees the cases in the earlier stages when tuberculin treatment offers the greatest chances for success.—*Über Tuberkulinbehandlung mit besonderer Berücksichtigung der Intrakutanbehandlung, H. Sahli, Schweiz. med. Wchnschr., July 1, 1920, l, 557.*

Immunization By Nonvirulent and Nontoxic Living Tubercle Bacilli.—Inoculations with dead bacteria do not afford complete security against infection, though they render the illness a mild one and shorten its duration. The use of living disease germs remains as the most rational method of treatment, and many attempts have been made to eliminate the dangers naturally associated with this method of treatment. The aim must be to make use of attenuated disease germs which still retain the capacity to produce immunity. Attempts in this direction, however, have encountered the greatest obstacles, although the most diverse methods of attenuation have been tried. No vaccines of great practical importance were obtained until among the tubercle bacilli of cold-blooded animals those of the turtle became the centre of interest. They occupy a position intermediate between the cold-blooded and human tubercle bacilli, on which account they are especially suited for use in the therapy of tuberculosis. They

develop vigorously at 98.6° F. When cultivated at the ordinary incubator temperature they exhibit the same cultural features as human bacilli. The original strain of the tubercle bacillus of the turtle which is employed therapeutically at the present time was isolated in 1901 by Piorkowski from two turtles which had succumbed to tuberculosis. After fifteen years of cultivation on artificial nutrient media and repeated passages through turtles, a strain of tubercle bacillus was obtained which is nonvirulent and nontoxic to man. Since experiments on animals showed also that this turtle tubercle bacillus produced a noteworthy immunizing effect, it is now possible to prepare the long desired vaccine from living tubercle bacilli which can be applied to human beings without danger of infection. It has been found most suitable to employ a mixture of bacilli cultivated at 98.6° F. and those cultivated at 68° F. It is not claimed that the vaccine restores organs which have undergone irreparable pathological changes, but is only applicable in the early stages of the disease. Just as in vaccination against smallpox, it is assumed that complete immunization against tuberculosis is established by a single injection of Piorkowski's vaccine.—*Active Immunization by Means of Nonvirulent and Nontoxic Living Tubercle Bacilli, C. D. Aaron, N. York M. J., January 15, 1921, cxiii, 91.*

Classification of Tuberculosis.—A new and definite method of classifying cases of tuberculosis should be adopted, and its use made obligatory for all medical officers of dispensaries, hospitals and sanatoriums dealing with County Council or State patients. The classification put forward is not designed to group cases according to their suitability for any particular individual treatment, but to separate cases into definite categories, in order to systematize their observation and disposal, and to form standards by which the results of treatment can be compared. It is based on the presence or absence of tubercle bacilli in the sputum and the presence, absence and extent of moist sounds (crepitations). Experience and statistics go far to prove that in the main the prognosis is distinctly worse in those with positive sputum and with definite moist sounds in the lungs. The following classification of suspected and diagnosed cases of active tuberculosis is suggested: A: Stage of observation of suspected active pulmonary tuberculosis in adults and children. 1. Patients exhibiting signs and symptoms suggestive of pulmonary tuberculosis with indefinite physical signs in the chest: require dispensary observation. 2. Patients after one month's dispensary observation in whom the signs and symptoms suggestive of pulmonary tuberculosis persist and the physical signs in the chest remain indefinite: if undiagnosable, require observation in hospital. B: Diagnosed cases of active pulmonary tuberculosis in adults and children over twelve years. B1: Early cases: (a) Tubercle bacilli absent. Physical signs in the chest indefinite or limited to the physical signs of fibrosis. Diagnosed after observation in dispensary or hospital. (b) Tubercle bacilli positive. Physical signs in the chest indefinite or limited to the physical signs of fibrosis. B2: Medium cases: (a) Tubercle bacilli absent. Definite moist sounds (crepitations) limited to one apex. (b) Tubercle bacilli present. Definite moist sounds (crepitations) limited to one apex. B3: Advanced cases: (a) Cases with crepitations extending lower than the apex on one side or present on both sides. (b) B1 and B2 cases plus tuberculous laryngitis. (c) Acute or miliary cases. B4: Fibroid phthisis, tuberculous. B5: Cases of bronchitis, emphysema or asthma plus pulmonary tuberculosis. C: Pulmonary tuberculosis in children under twelve years. D: Surgical tuberculosis: (1) Children under twelve years. (2) Adults and children over twelve years. E: Stage of arrested tuberculosis.—*Suggested Classification of Tuberculosis, W. B. Knobel, Tubercle, December, 1920, ii, 110.*

Fight Against Tuberculosis in Large Communities.—This report is based on a report by F. M. K. Menzies on tuberculosis in London. In London, which is particularly threatened by phthisis, although its tuberculosis mortality is one of the lowest in Europe, an educative and prophylactic organization which is relatively very extensive reaches out of 80,000 patients only half of the new cases occurring in a year. Only about a quarter of the latter are protected sufficiently early; the others are taken in hand too late, at a time when vital resistance is nearly exhausted, and, as a matter of fact they die within a few years. The treatment of cases which are bound, anyway, to sink lower and lower is overemphasized, and as a result the organization against tuberculosis supervises, educates and protects only a trifling portion of the 200,000 human beings who are daily subjected to massive infective doses. In order to be free from the technical errors of partial organization, a complete prophylactic scheme requires an increase of present resources. The defects in the campaign against tuberculosis are only partially due to economic and social difficulties. General prohylactic measures begin with the fight against the bovine ba-

cillus. Milk analysis shows the presence of Koch's bacillus in 6 per cent out of 943 samples collected for bacteriological examinations. A veterinary inspection of the suspected herd and the slaughter of the diseased animals are necessary. Compulsory notification of cases of tuberculosis yields often unsatisfactory results. In one Metropolitan borough out of 305 deaths attributed to tuberculosis in 1915, 31 per cent were only reported at death, 19 per cent were reported within a month of death, 16 per cent were within six months. Dispensary hours are too short and too crowded. The waiting period for institutional treatment is too long, namely from seven to fifteen days for an ex-soldier, twenty-eight days on the average for an adult, and eight to twelve weeks for a child.—*Organization of the Fight Against Tuberculosis in Large Communities, F. Humbert, Internat. J. Pub. Health, November, 1920, i, 371.*

Health Letters.—The health letters presented in this monograph represent the most consistent effort at health education in the community. They are reprinted from the Framingham *Evening News*, in which paper they have been carried every Saturday night for the last three years. There is presented, first, a special series on tuberculosis, which is followed by representative collections of health letters on various health topics. The letters have geen prepared by several members of the Health Demonstration staff. The special series on the fight against tuberculosis comprises letters on how we can fight tuberculous infection, on public, personal, home and food hygiene, the reduction of deaths from tuberculosis, etc. The selected groups of letters on general health topics comprise letters on tuberculosis in childhood, on the cured tuberculous, on regular medical examinations, child hygiene, safe milk for the children, the children's health camp, overwork, summer hygiene, dental care, self-doctoring, the need of rest and vacations, community hygiene and the dangers of breaking quarantine, flies, filth, and fever. The letters about special diseases give general information about the common cold and its prevention, influenza, heart disease in children, typhoid and scarlet fever, smallpox and vaccination, measles and malaria. Poison ivy, oak and sumac, mental hygiene and social diseases, and war work campaign are dealt with.—*Health Letters (Reprinted from the Framingham Evening News), D. B. Armstrong, December, 1920.*

The Film for Tuberculosis Propaganda.—The film which is being worked out by the central committee for the fight against tuberculosis will contain valuable information about the tubercle bacillus, differential diagnosis and therapeutic measures, various internal and external manifestations, and the social question and prophylactic measures. Clubs and professional organizations will be the sponsors of such productions. Moving picture theatres, available in the early afternoon and Sunday mornings, offer all technical requirements. An accompanying explanatory lecture by a physician will make the public performances interesting. But all these measures reach only a small proportion of the population and mostly those who need them least. In order to be effective they must reach all. This is only possible by education in the schools before graduation. There is no more convenient and effective measure than the film. Educational films on hygiene should be incorporaged in the curriculum of the schools.—*Der Film im Dienste der Tuberkulosebekämpfung, C. Thomalla, Tuberculosis, October, 1920, 257.*

Tuberculosis Problems in State Hospital Practice.—The general problems of tuberculosis and prevention in state hospital practice are more difficult to handle than in private life. The wards are overcrowded by lack of sufficient buildings, and the nursing force is inadequate. With the normal patient, the early symptoms of tuberculosis arouse his alarm and tend to bring him under treatment. With the mental cases, it is unusual to obtain any help of a subjective nature. Coughing among the tuberculous insane is lessened and often absent. Coöperation during physical examination is poor, making early diagnosis difficult. It has been surprising how few pulmonary hemorrhages have occurred. With a death toll of 315, only 5 suffered from hemorrhage. The treatment in general is similar to the usual sanatorium practice. Rest, fresh air, sunlight and forced feeding are at once started. No patient is allowed up who shows an afternoon temperature of 100° or over. For routine medical therapy the syrup of hypophosphites with creosote and, formerly, liberal but judicious use of whiskey and sherry for its tonic and fuel value have been used. The incidence of tuberculosis may occur in any form of insanity, other than dementia precox.—*Résumé of Tuberculosis Problems in State Hospital Practice, D. D. Durgin, Long Island M. J., November, 1920, xiv, 433.*

Controlling Tuberculosis.—The control of tuberculosis by means of community machinery or community activity should work along four lines: prevention of infection, discovery of the cases, treatment, and build-

ing up of resistance. Infection is prevented by the educational machinery, by visiting nurses and by the hospitals for advanced cases. To discover the cases, the clinic or dispensary, the nurse, the medical consultant and the medical examination drive on the sickness survey have proved very valuable. The care and treatment of the sick are carried out by the sanatorium, the nurse, the dispensary, relief agencies and the vocational work shop. The fourth group which is not so well defined, includes the open air school and fresh air class, both for subnormal and normal children, the fresh air camp, and summer schools.—*Controlling Tuberculosis, P. P. Jacobs, Long Island M. J., November, 1920, xiv, 430.*

Educational Training in Tuberculosis.—In the treatment of tuberculosis, perhaps more than in any other disease, failure and disappointment, while discouraging, have not daunted workers. There are waves of advocacy of this or that method of treatment, which in turn are condemned with often unnecessary emphasis. Yet in almost all methods of treatment there are elements of good, depending on the individual case. One reason for such diverging views is found in the impossibility of the tuberculosis worker obtaining adequate experience in the employment of all methods, or in his inability to apply them at that particular phase of the disease when they would afford the greatest prospect of success. The reason for this is an absence of team work, and the swamping of therapeutic effort by administrative details. The failures in the tuberculosis campaign are not entirely due to defects from without; they may, at any rate, in part be ascribed to errors from within. And yet such defects are ignored, our diagnosis as to cause of failure is faulty, our resultant treatment for that failure is correspondingly incorrect. The present tendency appears to be to spend money lavishly on tuberculosis schemes, but to do little to ensure that their conduct is entrusted to highly skilled workers. The evil commences in our medical schools. The medical student of today is the medical practitioner of to-morrow, and the general practitioner is our first line of offence against tuberculous disease. Comparatively little interest is taken in the instruction in the prevention, diagnosis, and treatment of the disease in the medical schools. There is not a single professor of tuberculosis in any teaching school in England or Ireland, and only two, both recently appointed in the United Kingdom. Few, if any, medical students ever enter any of the special institutions for tuberculosis, except as patients. The student would derive immense advantage if opportunities were afforded him for such instruction. The teacher also learns much in teaching. His work must be of a sufficiently high order to meet the needs of his pupil, who is quick to scorn incompetence, but equally impressed by knowledge and efficiency. A proper teaching unit should afford the fullest facilities for theoretical and practical instruction in all aspects of the tuberculosis problem. And these facilities should be available not only for the student, but also for the practitioner of medicine. The community would benefit even more than the practitioner, and if the latter is prepared to give up his valuable time the former should at least see that he does so without expense to himself. If it pays the state to educate without fee an elementary school student, how much more profitable must it be to train further a valuable public servant.—*Training in Tuberculosis, H, Gauvain, Brit. J. Tuberc., January, 1921, xv, 1.*

Coöperative Tuberculosis Campaign—Suggestions: 1. In view of the fact that there are more herds under supervision than can be promptly taken care of by regularly employed agents of the Bureau, and owing to the increase in applications from owners for herd tests under the accredited plan, much of the work now being done by Federal and State agents could be carried on by practising veterinarians, which would speed up the work, and in the future more recognition should be given the practising veterinarians. 2. There should be a more uniform interpretation of the accredited plan throughout the United States. 3. Steps ought to be taken to bring about a more uniform method for applying and interpreting the various tuberculin tests. 4. In so far as is practicable, the form of contract or agreement between the owner and Bureaus should be made more uniform. 5. Provision is to be made in the accredited plan whereby future amendments to the plan will automatically apply to existing contracts, thus doing away with the necessity of entering into new agreements or contracts with owners whose herds are already under supervision. 6. More attention must be given to preventive measures. 7. Full value up to a prescribed amount is to be paid for both native and interstate reactors which on autopsy show no visible lesions. 8. The practice of slaughtering all reactors is robbing the country of many of our choicest animals, which should be preserved to perpetuate valuable blood lines, and a greater united effort should be made to estabish more Bang herds on separate farms for keeping such animals. 9. The accredited plan must be

amended in a few minor details.—*The Co-operative Tuberculosis Campaign in Pennsylvania, T. E. Munce, J. Am. Vet. M. Ass., March, 1921, lviii, 706.*

Dispensary, Sanatorium and the Tuberculosis Officer.—At the dispensaries, attempts may be made to sort out so called early cases, but very few come under the observation of the tuberculosis officer, and so many middle cases are in such urgent need of treatment that sanatoria receive very few early cases. The various public and municipal sanatoria are practically monopolized by middle and advanced cases. One reason for the want of understanding and lack of action is that tuberculosis officers are compelled to treat what they cannot find. During their medical course they have not been taught to seek or recognize the really early signs and symtoms of tubercuosis. All effort will prove fruitless until treatment and prevention advance together. The tuberculous must learn to live the life of consumptives and they must be provided with permanent work. They must be capable of earning as much as possible to this end. Medicine, sociology, economics and psychology are involved in the tuberculosis question. The dispensary medical officer is discouraged and hampered on all sides. The system is wrong and except in rare and notable instances a complete failure. The head of the tuberculosis department should not be hampered by too varied duties or enmeshed in red tape and he should possess more knowledge. He should have time and facilities to study experiments, observations or publications bearing on his own work. He should possess the working knowledge of the extent to which treatment of patients in their own homes is beneficial, how far work can be arranged for, either in a borough or county area, the economics of the problem, the home conditions of the people and the relation of these to questions of infection, workshop and factory conditions, hours of toil and industrial fatigue. It would benefit the patient and community greatly if the tuberculosis officer were encouraged to deal with a case thoroughly. The dispensary officer and the sanatorium physician are kept in their little compartment and there is no expert head. *The Dispensary, The Sanatorium and The Tuberculosis Officer, The Weak Links in a Chain, P. C. Varrier-Jones and G. S. Woodhead, Lancet, January 29, 1921, cc, 256.*

Statistics on Infant and Tuberculosis Mortality during the Eighteenth Century: The First Census in Vienna.—The indefinite terminology of the times makes it difficult to give exact figures. The tuberculosis mortality figures in Vienna for the years 1752 and 1753 given in percentage of the total mortality and various age periods were

	per cent
1 to 4 years	27.4
5 to 9 years	36.0
10 to 14 years	31.4
15 to 19 years	28.0
20 to 39 years	25.9
40 to 49 years	26.4
50 years and over	20.8

In the classes from fifteen to thirty years, 50 per cent of the deaths were due to pulmonary tuberculosis.

Mortality figures per 1000 inhabitants at different periods

YEARS	TOTAL	TUBERCULOSIS
1752–1754	36.2	5.3
1867–1870	32.9	8.6
1871–1880	32.9	7.8
1881–1890	27.5	6.9
1891–1900	22.6	5.0
1911–1914	16.1	3.2

Tuberculosis mortality according to age per 1000 inhabitants

AGE	VIENNA 1752–1754			VIENNA 1910–1911	PARIS 1901–1905
	Male	Female	Total		
1–4	10.67	9.40	23.3	4.4	5.2
5–9			7.5 (10.0)	1.6	1.9
10–14			2.5	1.0	1.2
15–19	2.03	0.90	1.35	2.3	3.0
20–39	2.71	1.65	2.13	3.3	4.2–6.1
40–49	5.34	2.71	3.93	4.0	6.5
50*	11.13	8.63	9.83	4.0	6.0–2.9

* And over.

Those periods having a high total mortality also had a high tuberculosis mortality (up to fourteen years and over fifty years). The 1752 and 1753 statistics differ from those of the twentieth century in that the incidence is higher in the lower ages and after the twentieth year as compared to the periods of puberty. Seemingly tuberculosis during this period was more active in the younger years and thus exhausted itself, resulting in a lowered mortality during the periods of puberty and middle age. It is possible that the living conditions of the modern manufacturing city may be a factor in accounting for the higher mortality during the middle age

period. In 1753 there were 452 Jews in Vienna. The mortality from 1748 to 1755 was 69 or 18.9 per 1000 (19.3 male, 17.3 female) while the mortality for all of Vienna was 33 per 1000. In 1752–3 the mortality among the Jews of Vienna was 31 per 1000. The Jews had a low infant and childhood mortality while at puberty it equalled the general mortality. The Jewish tuberculosis mortality was 10 to 12 per 100 deaths while the total in Vienna was 25 per 100 deaths, or a tuberculosis mortality of 19.2 as compared to 52.7 per 10,000 inhabitants. Jewish children between the ages of 0 to 14 years had a tuberculosis mortality of 2.1 to 2.8 per cent while Vienna had 10.1 per cent.—*Zur Kenntnis der städtischen Mortalität im 18. Jahrhundert mit besonderer Berücksichtigung der Säuglings und Tuberkulosesterblichkeit (Wien zur Zeit der ersten Volkszählung.), S. Peller, Ztschr. f. Hyg. u. Infektions-krankh., 1920, xix, 227.*

Tuberculosis in Canada.—The estimated annual number of deaths from tuberculosis in Canada now amounts to 9,096. In the Dominion census for 1901 the deaths were estimated at 9,709, a decrease during the past two decades of over 30 per cent. This decrease is due to three factors: (1) the lessened infection in the homes from which tuberculous patients have been removed to hospitals and sanatoriums; (2) the earlier recognition and the earlier and better treatment of patients both in their homes and in sanatoriums; and (3) the better home and living conditions, especially in regard to ventilation, sanitation and personal hygiene. While there is this decline, there have been, and still are, more deaths from tuberculosis than are reported. The Canadian Association for the Prevention of Tuberculosis and the numerous local associations throughout the dominion have done a large amount of educational work during the past twenty years, and as a result dispensaries, preventoriums, sanatoriums, hospitals and laboratories have been provided in various centers. Much legislation, such as notification, antispitting laws and disinfection has been passed. The federal government supports this association which works in coöperation with both the federal department of health and the various provincial health authorities, all of whom are represented on its executive.—*Tuberculosis Problem in Canada, G. D. Porter, Publ. Health J., January, 1921, xi, 1.*

Cleveland Health Survey.—Cleveland is admirably equipped with legislation for the prevention of the spread of the great white plague. The inspection of milk is fairly well enforced and much is done in providing milk at cost for tuberculous citizens. The enforcement of housing ordinances, however, is wofully inadequate. Overcrowding is most dangerous and must be stopped in order to stamp out tuberculosis. The proper legislation for the segregation of advanced tuberculosis is rarely employed. Little attention is paid to the antispitting ordinance. No arrests had been made for this violation from January, 1919, to June, 1920. The Warrensville Tuberculosis Sanatorium is a model institution. Four to five doctors are on the staff, and 254 beds devoted to advanced cases. Other institutions for pulmonary cases are the Ohio State Sanatorium, with 23 beds reserved for Cleveland patients; the city hospital, with 100 beds, the State Insane Hospital with 6 beds for Cleveland; and the general hospitals which care for 10 to 12 cases. The antituberculosis league is somewhat at a standstill, after years of good work. The work of this league should and must be extended to meet the need in Cleveland. The Associated Charities (one of the best organizations of this kind in the country) and the Red Cross are doing much good. Little enthusiasm is shown by Cleveland physicians, owing, no doubt, to the lack of opportunity for special study in this field. It is hoped that the Western Reserve Medical School will supply a postgraduate training course in tuberculosis, open to all doctors, and that a consultation service, with the coöperation of the Western Reserve University may be established. The factory authorities should do more in detecting tuberculosis in its incipiency. Over half the cases found are advanced ones, with little hope for a cure. Annual or semiannual examinations of all employees is recommended. There is only one nurse for every six thousand inhabitants. There should be twice that number. There must be at least 500 more beds in Warrensville, the city and general hospitals devoted to the care of tuberculosis patients. An active educational campaign is needed.—*A Popular Summary of the Cleveland Hospital and Health Survey, 1920, 13.*

Tuberculosis of the Lip.—The case here reported represents an unusual instance of solid tuberculoma of the lower lip with ulcerations of the buccal mucosa associated with a chronic pulmonary tuberculosis of the fibroid type. Tuberculosis of the lip must be differentiated from chancre and epithelioma. A positive diagnosis rests on the finding of tubercle bacilli and the characteristic histology.—*Tuberculosis of the Lip, E. P. Zeisler, Arch. Dermatol. & Syphilol., January, 1921, iii, 14.*

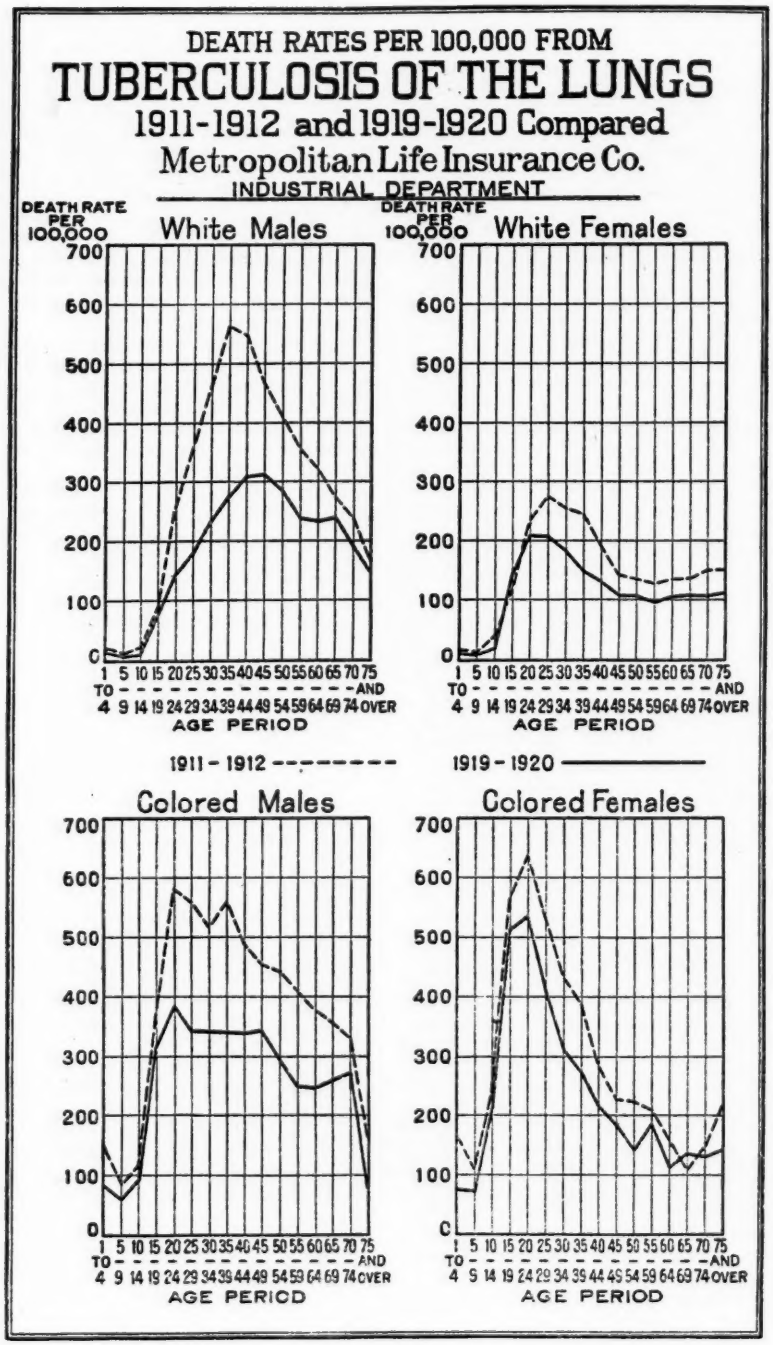
Pulmonary Tuberculosis in the Senegalese.—The Senegal negroes showed a type of tuberculosis common in children of middle Europe. The resistance however was somewhat increased. An aerogenous infection showed involvement in the lungs and also in the tributary lymph channels and nodes, progesssing to an exudative and caseous and miliary process. The type of disease is probably due to the unobstructed lymph channels of the lungs.—*Bemerkungen über Phthise bei Senegalnegern, G. B. Gruber, Ztschr. f. Tuberk., October, 1920, xxxiii, 23.*

The Conquest of Tuberculosis.—The attack upon tuberculosis seems to be succeeding to a degree not dreamed of by advocates of the work ten years ago. The health statistics of wage-earners insured in the Metropolitan Life Insurance Company record remarkable declines in the prevalence of tuberculosis. These reductions, moreover, are greatest at those age-divisions of life where the tuberculosis death rate is highest, where it creates the heaviest social damage in terms of broken and dependent families, and where it removes wage-earners from industrial life at a time when productive effort counts for most. Such gains deserve detailed consideration and will give further impetus to this fruitful work. The pulmonary tuberculosis death rate for insured white males between twenty-five and forty years of age in the two years 1919 and 1920 combined, was one-half of that for the combined years 1911 and 1912. At these age-divisions ten years ago, pulmonary tuberculosis prevailed at a rate of 4 to 6 deaths per 1000 persons annually; during the past two years, the tuberculosis death rate of this age-division of life varied from 2 to 3 deaths per 1000 persons exposed to risk. And this is not all of the good news. Beyond age forty and up to sixty-five years of age, there were reductions in the pulmonary tuberculosis death rate of white males varying from 44 per cent at the period forty to forty-four years, to 27.5 per cent at the age group sixty to sixty-four years. Beyond age sixty-five, the decline in the pulmonary tuberculosis death rate in this group was not less than 12 per cent. At the age group twenty to twenty-four years, when the stresses of industrial life first begin to show their effects upon the tuberculosis death rate, there was a decline of 45 per cent in the death rate. Among adolescents of the ages fifteen to nineteen years, the reduction was 27 per cent. A substantial reduction was observed also among white male children under ten years of age. The facts for insured white females and for colored males and females tell practically the same story of success in the control of the factors causing death from pulmonary tuberculosis. For these groups, also, the greatest relative declines in the tuberculosis death rate occurred in the main working period of life. For the age-period thirty to thirty-four years, there was a reduction of 47 per cent among white females. It is worthy of special comment that the savings in tuberculosis among this latter group were relatively less than among insured white males at all ages between five and sixty-five years, but after this age the savings were twice as great as among insured white males One of the anomalies of these recent figures is that there was an increase of about 3 per cent in the pulmonary tuberculosis death rate of white females in the ages between fifteen and nineteen years. There were greater declines in pulmonary tuberculosis mortality among negro children under fifteen years of age than among insured white children. But it should be remembered that even in the most recent years the death rates for colored children are still from six to ten times as high as among white boys and girls. Beyond age fifty, colored males show a greater decline in the death rate than do insured white males. The following table gives the percentage reductions in the pulmonary tuberculosis death rate.

Tuberculosis of the Lungs.—Percentage reduction, 1919–1920 from 1911–1912 death rates Metropolitan Life Insurance Company —Industrial Department.

AGE PERIODS	WHITE		COLORED	
	Males	Females	Males	Females
All ages — 1 and over...	42.4	22.2	30.7	21.3
1 to 4.....	14.4	22.2	40.8	55.0
5 to 9.....	29.5	10.8	32.1	28.5
10 to 14.....	7.4	6.3	11.0	11.9
15 to 19.....	26.5	3.4*	19.7	9.0
20 to 24.....	45.0	11.8	33.1	15.9
25 to 29.....	49.5	24.9	38.7	22.0
30 to 34.....	49.5	46.6	33.6	27.2
35 to 39.....	50.9	37.9	39.1	29.3
40 to 44.....	43.7	32.1	31.2	25.5
45 to 49.....	33.8	28.0	24.7	19.5
50 to 54.....	30.1	23.8	32.4	36.7
55 to 59.....	32.8	22.0	38.2	10.2
60 to 64.....	27.5	24.8	35.0	30.0
65 to 69.....	11.7	24.3	24.6	31.9*
70 to 74.....	18.4	32.6	17.2	11.0
75 and over...	12.0	30.8	49.4	35.0

* Percentage increase.


DEATH RATES PER 100,000 FROM
TUBERCULOSIS OF THE LUNGS
1911-1912 and 1919-1920 Compared
Metropolitan Life Insurance Co.
INDUSTRIAL DEPARTMENT
DEATH RATE PER 100,000
White Males
White Females
Colored Males
Colored Females
700
600
500
400
300
200
100
0
1 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75
TO AND
4 9 14 19 24 29 34 39 44 49 54 59 64 69 74 OVER
AGE PERIOD
1911 - 1912
1919 - 1920

We may conclude broadly from these data that it has been possible for all of the community forces working together so to modify the environmental and perhaps also the hereditary factors in tuberculosis as to reduce very materially the number of lives formerly lost to society on account of this disease. At those age-ranges where environmental factors are not so important and where, perhaps, the constitutional element is uppermost (among children and the aged), the death rate has not declined so rapidly. The chart shows the changes which have occurred in the eight years—*From Statistical Bulletin; Metropolitan Life Insurance Co., March, 1921, ii, 1.*

Heredity in Tuberculosis.—H. M. King of Liberty, N. Y., observed in 242 cases of tuberculosis that the percentage of individuals with a tuberculous parentage was smaller than that of those with a nontuberculous parentage, and that the children of tuberculous parents when attacked by disease showed a greater resistance and a stronger tendency to recover than other persons. The observation of Adams is that children of tuberculous parents are certainly more exposed to infection, but that it seems possible that they are more resistant to the disease than other children, and that this fact may to some extent account for the diminishing mortality from tuberculosis. In the study of 1000 cases it was found that over 60 per cent of the cases treated gave no family history. The results of treatment were compared under identical conditions of the two classes of patients. In each group the percentage of patients who failed to respond to treatment was less among those with a family history than among those without. The gravity of the history made little difference. There was marked difference in the greatly improved group where the results also are in favor of those with a family history. The question is raised whether it is not probable that the decrease in the death rates from tuberculosis is largely due to an acquired or hereditary immunity which is steadily raising the resistance to the onset and course of the disease, and that the cases of tuberculous families are only examples of massive infection during infancy and childhood in which the resistance is overcome.—*Heredity in Tuberculosis, A. Adams, Tubercle, January, 1921, ii, 145.*

What the War has Taught with Regard to Predisposition to Tuberculosis.—The fact that very many soldiers harbored the tubercle bacillus within their bodies, and that only a certain number of these developed tuberculosis, proves how the disease singles out for its victims those with lowered organic resistance which is accentuated by a wartime environment. The tubercle bacillus in itself is not sufficient to produce the disease; the individual must also have a hereditary predisposition. Viewed from this standpoint, the danger of contagion must always be subordinated to the predisposing factor. This determinism plays a greater part in tuberculosis than in any other infectious disease. It is only the soldier who has a constitutional predisposition that develops tuberculosis under the stress of war.—*La predisposizione alla tuberculosi e gli insegnamenti della guerra, F. Vincenzo, Tuberculosi, July, 1920, xii, 201.*

Industrial Tuberculosis and the Factory Dust Problem.—Any useful method of dust determination must include particles ranging down to one micron in diameter. Methods of estimation of atmospheric dust may err by revealing only the very large particles present in the air or by including particles too small to be of any sanitary significance. The desideratum is a method which will reveal the number of dust particles of a diameter between 10 microns and 1 micron. Of the 3 methods which are in use at the present time and which appear to meet these requirements the Palmer apparatus appears to be the most satisfactory. In this method the air to be sampled is drawn through water in a shallow trap at such a rate as to break up the water into a fine shower of spray in a glass bulb above, and this spray retains the dust in the air and finally washes it down into the trap. After the completion of a run, the dust which has accumulated in the water may be estimated by direct microscopic enumeration of the number of particles in a Sedgwick-Rafter cell and by weighing the dust after filtration through a Gooch crucible. The Palmer water spray apparatus is fairly convenient and portable. It yields only about 60 per cent of the total dust present in the air. The average dust content of pure outdoor country air was 7100 to 50,300 dust particles per cubic foot. Of three samples collected outside the Woolworth building, one from the street level showed 118,000 particles per cubic foot, one from a window on the tenth floor, 72,000, and one from a window on the fifty-eighth floor, 23,000. The average dust content of the air in various types of industrial establishments was studied. It ranged from values between 100,000 and 200,000 dust particles per cubic foot in factories where the dust problem is well cared for to figures 100 or even 1000 times as great in the worst types of grinding shops and abrasive factories. There are, in general, four different methods of protecting the worker

against the influences of industrial dusts, which may be classified as follows: the substitution of wet processes for dry processes; the conduct of dust producing operations in enclosed chambers; the removal of dust by hoods equipped with exhaust draft; and the use of respirators and helmets. The use of moisture may or may not be effective, depending on the details of the process and the method by which the water is applied. The way to determine the efficacy of any method is by a study of the actual dust content of the air. The method of controlling the dust hazard which consists in the carrying out of dust producing processes, such as sifting, crushing, tumbling, and the like, by mechanical devices in enclosed chambers, has proved notably successful in dealing with poisonous dusts. Excellent results may be obtained from the use of hoods equipped with a system of exhaust ventilation sufficiently powerful to remove the dust as it is produced and to carry it away from the workroom, in certain types of grinding and polishing, which cannot be carried on by wet methods or in enclosed chambers. Defects in construction of the hood system are common. In certain industrial processes, as in packing operations, in marble and granite working, and in the sand blasting of large castings, it is impossible to keep the air of the work place free from dangerous concentrations of mineral and metallic or poisonous dusts by any of the methods mentioned. In such cases the only alternative is the wearing of respirators which filter out the dust particles from the air before it is drawn into the respiratory tract, or of helmets which exclude the dusty atmosphere more or less completely from the mouth and nose and supply pure air for breathing from some other source. All such devices are uncomfortable and irksome to the wearer and should be avoided wherever possible. From the standpoint of the actual dust content of the air which would be respired by a sand blaster, the use of the respirator alone evidently fails to provide an adequate protection. From the standpoint of per cent removal, on the other hand, the respirator showed a high efficiency which should make it a fairly satisfactory protective device for use in a work place where the initial dust content is not enormously high. The use of the helmet and respirator in combination produced a reduction from an average of 58,330,000 dust particles per cubic foot of air to an average of 2,355,000, a reduction of 96 per cent. These results are distinctly better than those obtained with the respirator alone, but the air was still too dusty to be respired with safety. The tests with positive air pressure showed that the dust content of the air collected in this way, with an average air supply of 2.9 cubic feet per minute to the interior of the helmet, ranged from 18,000 to 329,000 one-fourth standard unit particles and average only 151,000 such particles per cubic foot. It is important that standards of a reasonably definite nature should be established by which the adequacy of protective devices can be judged in any given case. Only three efforts have so far been made to set definite standards of this kind for industrial dusts. They were made by the Miners' Phthisis Prevention Committee of South Africa, by Higgins, Lanza, Laney, and Rice in a study of the mines in the Joplin district, Missouri, and by the authors. The latter suggest that a fair measure would be obtained by specifying that the suction head in the exhaust pipes of a polishing shop should at no point fall below 2 inches, and should average 3 inches. The velocity of the exhaust air current maintained at the throat of the exhaust duct should not fall below 1500 feet. It is tentatively concluded that in a polishing shop the weight of dust in the air can be constantly kept below 0.06 mgm. per cubic foot and should not average over 0.03 mgm., while for a grinding shop these values should perhaps be doubled. The dust content of the air can be kept generally under 300,000 one-fourth standard unit particles per cubic foot and should not average over 200,000 such particles. These standards are subject to revision with the development of a wider knowledge of the air conditions in representative workrooms.—*Industrial Tuberculosis and the Control of the Factory Dust Problem, Part II, C.-E. A. Winslow, and L. Greenburg, J. Indust., Hyg., February, 1921, ii, 378.*

Infectivity of Tuberculosis.—The writer takes the view that the great majority of the mates of tuberculous husbands or wives sooner or later show signs or develop symptoms of tuberculosis; and further believes that the great majority of those infected recover, and make a speedier recovery, than most tuberculous patients. If a man or woman of a tuberculous type marries, they usually do not marry another of the same type. No one can deny that the individual resistance to tuberculosis varies within wide limits, or, indeed, that there may be varieties of low resistance, but the main factor in spreading the disease that suggests itself when visiting the homes of tuberculous patients is infection. The question of direct infection apart from conjugal cases is more difficult, and would be almost hopeless to attack in any but rural districts. The writer has sometimes found a little colony

of tuberculous persons in a more or less isolated spot, such as one street of a village, and is inclined to attribute the existence of such a colony to conditions of infection due to carelessness, rather than to the influence of the local climate, or the prevalence of some special wind. These considerations seem to indicate that the attempt to check tuberculosis should be made by treating it as an infectious disease, dealing first with obvious sources of infection in the home and the factory. These measures would entail no great hardship to individuals or any dislocation of society, and we might very well find after their adoption that the infection was becoming less universal, and further means to prevent the disease completely would suggest themselves.—*The Infectivity of Tuberculosis, E. Ward, Brit. J. Tuberc., January, 1921, xv. 5.*

Lung Wounds and Pulmonary Tuberculosis.—In addition to previously reported cases (*Ztschr. f. Tuberk., xxvi, no. 1, and xxix, no. 1*) 18 new ones are reviewed. These are divided into those with old inactive tuberculosis which was not reactivated by the lung wound, and those which developed active disease following lung wounds. In the first group there were 3 cases. The wounds were produced by shrapnel, grenades, and rifle. Definite evidence of active tuberculosis did not exist and the X-ray showed in 2 cases very slight changes at the hilum, and by physical examination a slight impairment of note over the apex. In group two there were 15 cases, in 2 of which there was a previous tuberculosis. In 3 of the remaining 13, X-rays were not taken. In 4, plates showed no evidence of a previous tuberculous process, in 2, questionable and 6 definite. The wounds were produced by rifle bullets in 6, hand grenades in 5, shrapnel in 3, and unknown in 2. In summarizing one finds that of over 6000 patients who during the world war were taken into the sanatorium at Beelitz only 75 had lung wounds. Eight additional patients came after discharge from the army. Among the total of the 83 patients no tuberculosis could be demonstrated in 37, or inactive old tuberculosis foci were not activated, and in 46 active disease became manifest and was most likely the result of the lung wound. Conclusions: A latent tuberculosis may be activated by lung wound but this is an infrequent occurrence.—*Lungenschüsse und Lungentuberkulose: eine letzte Beobachtungsreihe und Schlussbetrachtungen, G. Frischbier, Ztschr. f. Tuberk., October, 1920, xxxiii, 7.*

Chest Wounds and Pulmonary Tuberculosis.—Among 2359 army men in the sanatorium at Überruh there were 33 who had chest wounds. Records of 10 of the 33 cases were very incomplete. Of the remaining 23, 14 had perforating lung wounds, in 1 case both lungs; 3 had penetrating lung wounds; 6 had chest wounds with questionable injury to the lungs; 1 had a shoulder wound. The wounds were caused by rifle bullets in 7, by grenades in 6, by machine propelled bombs or grenades in 5 instances, and in 2 the cause was not recognized. Open tuberculosis occurred in 9 cases, closed in 14. Among the latter were 12 active cases and two probably active, so that there were 21 cases of known active tuberculosis. In 9 cases there was no family history of tuberculosis nor a history of previous tuberculosis. Of these 4 were open cases and 5 active closed cases. The remaining 7 cases who had no family history or previous history of tuberculosis showed old tuberculosis, reactivated after shorter or longer periods after the wound. The time elapsing between wounding and symptoms of tuberculosis ranged from one month to five years. The wounded lung was first and more severely involved in 17 cases. In 5 additional cases the more severely wounded lung was not the more seriously diseased. Summary: 1. Reactivation of old tuberculous foci in the lung, through wounding, appears to be not so infrequent as is commonly believed, and, although trauma is of prime importance in the most cases, nevertheless physical and mental strain as is encountered in the field, as also insufficient nourishment, play a very important rôle. 2. The prognosis of such cases as developed pleural thickening and adhesions must be guarded. 3. Two cases were observed that were apparently perfectly well, in which there was no family history of tuberculosis and in which no tuberculosis could be demonstrated by physical and X-ray examination before wounding, and in these most likely there was a new infection. 4. A close relation between the trauma and location of the tuberculous lesion existed in the sense that the wounded lung was the first to show the disease and the more severe disease in the majority of cases. 5. The period between wounding and the appearance of active tuberculosis was shorter in those cases which had received previous treatment for tuberculosis than in those in which no previous family history or previous tuberculosis could be substantiated.—*Brustschüsse und Lungentuberkulose, O. Seiter, Ztschr. f. Tuberk., October, 1920, xxxiii, 1.*

Tuberculosis and Reinfection.—In 1908 Calmette addressed a letter to practising physicians in France on the subject of Marfan's "law," which emphasizes the rarity

of progressive tuberculosis in adults who in infancy have had and been cured of tuberculous adenitis. The answers received confirmed the law. In his recent work, *L'Infection Bacillaire et la Tuberculose*, Calmette relates many experiences of different workers on the Koch phenomenon, concluding that the consumptive is one who has received since childhood successive more or less massive reinfections. Bushnell in his recent *Study in the Epidemiology of Tuberculosis* is emphatic in stating that reinfection cannot occur after a primary infection has been established, supporting his contention with the facts on the absence of reinfection in other chronic diseases as syphilis and malaria. Against Bushnell's statement that the subject may die of extension of the disease, but in pulmonary tuberculosis will preserve to the end of his life the first degree of immunity and develop no distant foci due to his own bacilli, stands the frequency of ischiorectal abscesses and laryngeal lesions, which are not terminal. Theobald Smith holds the view that a bacillus coming to the lungs from without has as good a chance as one carried there from a preëxisting focus. The size of the reinfecting dose is the vital factor. Tuberculization of the race is for the most part beneficial, and humanity may be to a considerable degree protected by the primary infection. However it does not as yet seem possible to be absolutely certain that reinfection from without does not occur.—*Tuberculosis and Reinfection, Editorial, J. Lab. & Clin. Med., December, 1920, vi, 162.*

The Disinfecting Power of the Solar Rays upon Tubercle Bacilli.—Preparations of tubercle bacilli in pure culture, pus from tuberculous glands and fresh expectoration were made in the thinnest possible layers and then after varying exposures to sunlight were dissolved in physiological saline solution for inoculation into animals. For controls, preparations dried in the air were likewise inoculated into guinea pigs. Special filters variously constructed with uviol glass containing copper sulphate solution were employed to isolate the ultraviolet rays. The exposures were made in Leysin at a height of 1360 meters only on very sunny days between the hours of 10 a.m. and 2 p.m. when the maximum intensity of light was found. During the exposure, solar intensity, temperature and relative humidity were determined. The conclusions reached were the following: 1. The disinfecting power of sunlight against virulent tubercle bacilli at an altitude of 1360 meters under the most favorable conditions, in the summer months of June to August, was revealed in about a half hour, in the fall and spring in about an hour and in the winter months in a little longer time. In the coldest winter days with the least solar intensity, the bacilli never withstood two hours of radiation. 2. Ultraviolet rays of the summer sun only harm these bacteria and only in very exceptional cases kill them. This ultraviolet light offers at the most 20 per cent of the total light effect. Those wave lengths between 450 and 280 microns constitute the ultraviolet light. The bactericidal working of sunlight is about proportional to the physical and chemical intensity in which the maximum brightness and photometric effects join in with the greatest disinfecting power. Controls showed that drying and heat had no particular influence upon these results. It is to be assumed that the killing of the bacteria has to do with osmotic changes. It may occur through oxidation, coagulation or the destruction of albumin. It is not finally decided that the favorable healing effect of sunlight has any direct relationship to the bactericidal action of the rays. The hours in which the greatest intensity of ultraviolet light is found are just those of the day during which patients do not take the cure. The importance of the ultraviolet rays in the cure is exaggerated.—*Über die desinfizierende Kraft der Sonnenstrahlen gegenüber Tuberkelbazillen, J. von Bergen, Schweiz. med. Wchnschr., December, 1920, 1120.*

Contribution to the Scientific Study of Heliotherapy and Phototherapy.—Rollier and Rosselet in 1908 attributed their success not only to the ultraviolet rays but to the whole spectrum. They found that the patients who pigmented did better than those who did not. The pigment was considered to be able to change not only the ultraviolets but also the blues and violets into rays of longer length and therefore greater penetration. No satisfactory spectroscopic study of pigment could be made. Most of the enthusiasm for the mercury quartz lamp has resulted from the studies of Berthelot and Gaudechon made in the laboratory of Meudon. They found that under the influence of ultraviolet rays a mixture of CO_2 and NH_3 becomes the amide of formin, which is justly considered the point of breaking off of albuminous substances, and this is the basis of living tissues; also the same rays exposed to a mixture of water and carbonic acid form formaldehyde, the condensation of which gives the vegetable sugars. This was found in the laboratory to be the first stage of assimilation of chlorophyll. Among the heat bodies formed, they were able to produce an explosive gas by expos-

ing water to these very short rays. They obtained this at ordinary temperatures, whereas without the rays it can only be at a temperature of 1000°. All these experiments were obtained only with the extremest of the short ultraviolets. The results obtained in the laboratory in regard to assimilation of chlorophyll are realized in nature by the use of plain sunlight, and this does not contain the short ultraviolets of the lamp. The question as to the exact properties of pigment is unsettled. If one says that it is a protection only, then it can not be considered as a means of using the rays of sunlight more profitably. Von Bergen recently found that bactericidal action of sunlight ultraviolet is only 20 per cent of the total direct sunlight, but he does not decide (nor has any one else) whether the efficacy is due to the intensity or to the frequency of the radiations. From most of the experiments, Rollier concludes that more credit should be given to the light rays because in nature they have a similar effect to that which the ultraviolet rays or the very high temperatures have in the laboratory. All the radiation emitted by the sun can affect our organism.—*Contribution à l'étude scientifique de l'héliothérapie et de la photothérapie, A. Rollier and A. Rosselet, Schweiz. med. Wchnschr., February, 1921, 172.*

Light Dosage.—The need of some method of accurately knowing the intensity of the source of ultraviolet rays led the writer to repeat the work of a few others who claimed that the chemical destruction of a mixture of hydrogen and iodine was a simple and accessible method. The quartz light of Jesionek was used and titration carried out with 1/400 normal sodium thiosulphate solution. A colorimeter that had been recommended to determine the intensity of color of the liberated iodine was also used. The conclusion was reached that the measuring of the workings of the ultraviolet rays through titration and colorimetric methods for the amount of iodine set free was not a practicable nor a simple method and deprived the physician of too much time for controlling the dosage of light treatment.—*Versuche zur medizinischen Lichtdosierung, F. Rettig, Deutsche med. Wchnschr., January, 1921, l, 74.*

Scarlatinal Rash After the Use of Quartz Light.—A patient eighteen years old had, as a child, measles, diphtheria and also possibly scarlet fever but no previous skin diseases. He had always reacted to sunlight with a good pigmentation although a blonde in type. He was exposed to the lamp at a distance of 70 cm. for three minutes in the upper part of his body, front and back. At night, on going to bed, red spots about the size of a ten cent piece appeared on the neck, behind the ears and later on the chest and soon spread all over the body except around the mouth and nose. They could be made to disappear on pressure. After two days the rash began to disappear. There was no rise of temperature and no symptoms in the throat and no general disturbance. No reasonable explanation could be given for this.—*Skarlatinoses Exanthem nach Quarzlampenlicht, H. Austgen, Deutsche med. Wchnschr., January, 1921, l, 75.*

Action of Light on the Leucocytes.—Many conflicting opinions in regard to the action of light on both the red and white cells have been reported. There is considerable evidence for believing that there is a decrease in the red cell count and in the percentage of hemoglobin in the dark but an increase in the light. However these changes are not permanent. The usual opinion in regard to the white cells has been an increase in the lymphocytes and a decrease in the polynuclears as a result of prolonged exposure to sunlight, although this finding is not conclusive. In the present experiment, separate parts of the spectra of the iron arc were used to determine the effects on the blood of rabbits whose ears were exposed for one hour at a distance of ten inches. The ear was shaved and the eyes were covered. The iron arc is almost a continuous source of light and is strong in the ultraviolet, in contrast to sunlight, which is really weak in ultraviolet, but stronger in visible light. Screens were used to allow separate determination of the effect of the short ultraviolets and the longer ultraviolets and two divisions of the visible spectrum. No changes occurred in the red cells. The changes in the white cells were the following: 1. The region of far ultraviolet (wave length shorter than 300 microns) has practically no effect on the absolute number of polymorphonuclears, but produces a very marked lymphocytosis, lasting about three weeks. 2. The near ultraviolet (330 to 390 microns) has a marked depressing effect on the lymphocytes, and, to a less degree, on the polymorphonuclears. 3. The region between 450 and 650 microns has a stimulating action on both lymphocytes and polymorphonuclears, particularly on the former. 4. The wavelengths longer than 650 microns (the red and infrared), produce no effect on the blood beyond the drop in lymphocytes which occurs immediately after exposure to light of any kind. No satisfactory explanation can be given for the cause of these changes. It was attempted to prove that

the destruction of the white cells at the start of radiation might act as a stimulus to the lymph nodes and thus cause the subsequent rise, but injection into rabbits could not verify this. Likewise an attempt to prove that the absorption of light by the hemoglobin or plasma of the blood might lead to the formation of products that stimulate the production of lymphocytes failed. The action on skin tissue may be indirectly responsible.—*Action of Light on the Leucocyte Count, Janet H. Clark, Am. J. Hyg., January, 1921, i, 39.*

The Presence of Red Blood Corpuscles in the Miliary Tubercles of the Spleen.—The histologic examination of the spleens from 36 of a total of 46 cases of miliary tuberculosis in man in which this organ was involved in the general process revealed varying grades of accumulations of red corpuscles (hemorrhage) in the tubercles. In 8 of the negative cases the marked necrosis present may account for the absence of red cells in these spleens; only 2 cases thus being definitely negative. The difference between the lymph nodes and the spleen in this respect is explained on the basis of their different anatomical structure especially as concerns the lymphatic and blood vessels, there being no marked differentiation between these vessels in the spleen, while in the lymph nodes they are entirely separated. The spleen is likewise to be considered as anatomically differing in this respect from all the other organs of the body. An inflammatory basis for the presence of the red corpuscles in the tubercles of the spleen is not tenable.—*Über das Vorkommen roter Blutkörperchen in den Miliartuberkeln der Milz, O. Heitzmann, Virchow's Arch. f. path. Anat., 1920, ccxxvii,* 174,

The Endothelium in Experimental Miliary Tuberculosis.—The purpose of this paper is to draw attention to the important part taken by cells originating in capillary endothelium, in various types of inflammation. This is a report of the histogenesis of the cells forming the tubercles produced in rabbits by the intravenous injection of tubercle bacilli. Conclusions: 1. Miliary tubercles produced in the lung, liver, spleen, kidney, lymph nodes, and omentum of the rabbit by hematogenous tuberculous infection are composed chiefly of cells originating in the capillary vascular endothelium. 2. These cells have a marked affinity for carbon in colloidal suspension, which makes their identification possible. 3. A benzidine dye like niagara blue, while acting selectively on macrophages, lymphoid reticular cells, renal convoluted tubular epithelium and free polymorphonuclear leucocytes is not found in the tubercles to any appreciable extent, unless there is necrosis. when the staining is diffuse. 4. The tubercle reticulum is composed of fibrils resembling connective tissue fibroglia and collagen fibers in every way and is produced not only by fibroblasts, but by the endothelial cells themselves, after these have migrated from the vessels, differentiated into epithelioid cells, and formed tubercles. This process is well advanced five weeks after inoculation.—*Studies of Endothelial Reactions. IV. The Endothelium in Experimental General Miliary Tuberculosis in Rabbits, N. C. Foot, J. Exper. Med., February, 1921, xxxiii, 271.*

Hemorrhages into the Liver in Pulmonary Tuberculosis.—Punctate hemorrhages into the liver occur in cases of pulmonary tubercu'osis which differ from those occurring in other hemorrhagic conditions (eclampsia, sepsis, etc.) affecting the liver. Meyer and Schoenlank believed them to be agonal and all of the same duration. Mittasch studied the liver from a far advanced consumptive histologically and found evidences of various stages of organization and fibrin formation which led him to the conclusion that the condition is neither agonal nor entirely occurs at the same time. No actually ruptured vessels were found, but he believes ectatic veins or capillaries of toxic or other origin may easily be ruptured by blood pressure changes occasioned by violent coughing in consumptives.—*Über Leberblutungen bei Lungentuberkulose, G. Mittasch, Virchow's Arch. f. path. Anat., September 30, 1920, ccxxviii, 476.*

Anatomic Investigations of Tuberculosis in Childhood.—Postmortem examinations in the pathological laboratory of the University of Utrecht from August, 1906, to January, 1919, of 776 children up to fifteen years disclosed tuberculosis in 187 of the cases, the frequency increasing with age. A few cases were found at birth. Primary intestinal tuberculosis was rarely found anatomically so that aerogenic infection should be looked upon as the usual route. Prophylaxis should begin with the removal of young children from the surroundings of open consumptives. Pulmonary tuberculosis was especially malignant. There were 60 cases of tuberculous meningitis among the 187 cases. Bone tuberculosis, especially of the spinal column, in youth was mild and had a protracted course.—*Pathologiesch-Anatomiesche Onderzoekingen van Tuberkulosis in den Ouderdom van Kinderen, E. C. Rijssel, Geneeskund Bladen uit Klin. en Labor., xxi,* 32 (*translated from Zentralbl. f. innere Med., April 17, 1920, no. 16, 292*).

Tuberculosis Antibodies in the Aged.—In order to confirm the impossibility of diagnosis of clinical tuberculosis by the cutaneous tuberculin reaction, Ichok in the laboratory of Besredka, Institut Pasteur, selected 12 nontuberculous patients from sixty-two to eighty-eight years. Eight were senile, three had nervous affections, one showed symptoms of hemiplegia. The intracutaneous reaction was positive in every case after forty-eight hours. The finding of tuberculosis antibodies by means of the complement fixation test is much more important clinically. In active tuberculosis the fixation reaction is early and very pronounced; in inactive or absent tuberculosis the reaction is negative. Since tuberculosis in the aged usually is in attenuated form, because of increased resistance, it seemed important to undertake a study of the antibodies in them. The study was made on 100 patients cared for at the Salpêtrière and in the hospital St. Louis. There were 20 patients aged fifty to fifty-nine years, 19 from sixty to sixty-nine years, 42 from seventy to seventy-nine years and 19 from eighty to eighty-eight years. Fifty-two of these showed positive signs of tuberculosis and 48 were nontuberculous. Of the 52 patients, 18 had pulmonary tuberculosis, 24 lupus and skin tuberculosis, 6 osteomyelitis and arthritis, 1 Pott's disease and 1 cold abscess. The 48 nontuberculous patients were suffering from senility (21), nervous affections (11), hemiplegia (4), cardiac disease (4), rheumatism (2), tumors (2), arthritis (2) and bronchitis (2). The sera from the 48 nontuberculous patients all gave a negative result. Of the 52 tuberculous cases, 46 gave a positive result. Unrecognized tuberculosis of the aged is particularly dangerous to the environment; hence the value of the reaction. The negative results observed in the patient without clinical manifestation of tuberculosis demonstrate that the antibodies do not remain in the organism after the first infection which almost always occurs in early infancy, but that they are the result or the evidence of actual disease.—*La recherche des anticorps tuberculeux chez les vieillards, G. Ichok, Progr. Méd., January 22, 1921, no. 4, 25.*

Resistance of the Caterpillar to Tubercle Bacilli.—Previous investigations by the same author have shown that as a rule invertebrates are highly resistant to organisms pathogenic for man. Curiously enough the caterpillar *Galleria Mellonella* is much less resistant to injections of certain saprophytes, as B. coli, B. pyocyaneus, B. subtilis, and B. proteus. It displays an extraordinarily high resistance to infection with tubercle bacilli. The latter injected into the body cavity in uniform suspension, in volume equal to the total blood volume, undergo rapid phagocytosis by wandering cells and encapsulation by masses of such cells. Encapsulation occurs within two hours, hundreds of capsules being formed within a day. The capsules persist during the incubation of the caterpillar and its development into chrysalides and butterflies. They are formed in the latter following injection almost as well as in the immature caterpillar. The capsules may be looked upon as true tubercles. Within them the bacilli are digested to a brown, liquid mass, within which acid fast bacilli may not be found, unless they were present in large clumps in the injection mass. Contrary to the results of Fiessinger the author finds that five days after infection the contents of these caterpillars are as a rule not infective for guinea pigs. Thus the caterpillar displays a high resistance to infection with the tubercle bacillus due to intracellular digestion. Serum antibodies could not be demonstrated. Metalnikow was unable to isolate the ferment responsible for the intracellular digestion.—*L'immunité naturelle et acquise chez la chenille de Galleria Mellonella, S. Metalnikow, Ann. d. l'Inst. Pasteur, November, 1920, xxxiv, 888.*

Metabolism in Grave, Afebrile Tuberculosis.—From a practical standpoint it is important to know whether in afebrile tuberculosis there is an increase in the metabolism of the whole body in much the same manner as in carcinoma and in leukemia. On the basis of his observations over a period of years the author feels himself in a position to decide the question. A table gives the results of his investigations in ten afebrile, very active, progressive, open, cases of tuberculosis. Of these ten only two showed no increase in metabolism, in one the increase was very slight, while the others presented increases of from 20 to 36 per cent. He concludes that the gross calory requirement in severe, progressive tuberculosis, with the patient in bed and suffering from no marked dyspnea, no matter whether there is moderate or no fever, is from 50 to 55 calories per kilogram of body weight, or about 1500 calories per square metre of body surface. In cases with high fever, from 60 to 65 calories per kilogram, or about 1700 calories per square metre are required for really adequate nutrition. In practice it may not be always possible to attain this standard, but we must strive for this goal.—*Stoffwechsel Untersuchungen bei schweren afebrilen Tuberkulosen, E. Grafe, Münch. med. Wchnschr., September 17, 1920, lxvii, 1081.*

Metabolism in Tuberculosis.—In regard to the dietary of tuberculous patients

medical opinion has fluctuated within wide limits. To make the selection it is necessary to know the total energy transformations in such patients and the extent of destruction of protein by the toxins of the disease and the minimum amount of protein which must be given to maintain the patient in nitrogen equilibrium. In this study the respiration calorimeter of the Russell Sage Institute of Pathology was employed. Fifteen patients in all stages of the disease and with various complications were studied 14 to 16 hours after the last regular meal. It was found that the basal metabolism of tuberculous patients may be normal or very slightly above that of normal men of the same size. Thus, in 10 cases the variations from average normal was from minus 3 to plus 15 per cent. Further increases in metabolism occur with a rise of body temperature. These increases are not large. Thus, in one case the temperature rose 1°C. during two hours without a chill and the heat production of the second hour was only 2 calories greater than that of the first hour. With a rectal temperature of 104° F., the metabolism may be 30 per cent above the average normal. The basal heat production in tuberculosis may be less than the normal for the same patient when in health; in other words, the loss in weight may be accompanied by a reduction in metabolism which more than compensates for the tendency to increase caused by the disease. Limited data regarding the nitrogen excretion show that, while a toxic destruction of protein does exist in tuberculosis, it is not large. The urinary nitrogen may be reduced to from 5 to 6 gm. per diem, though nitrogen balance may be attained only at a higher level (about 10 grams a day). The specific dynamic rise in metabolism produced in 2 cases by the ingestion of a protein meal corresponded closely with that produced by the same meal in 3 normal men. Conclusions: In view of the fact that the food requirements of tuberculous patients are not large, either as regard total energy value or nitrogen content, forced feeding is unnecessary and is probably harmful in the active stages of pulmonary disease. Since protein increases the respiratory exchange in the tuberculous as in the normal, it may be well to limit the protein intake during periods of activity of the disease in order to put the lungs at rest. —*Clinical Calorimetry. XXIX. The Metabolism in Tuberculosis, W. S. McCann and D. P. Barr, Arch. Int. Med., December, 1920, xxvi, 663.*

Metabolism and Diet in Tuberculosis. —In the management of tuberculosis dietotherapy has long occupied a place of primary importance, perhaps justly, since none of the more specific therapeutic measures, including tuberculins of diverse sorts, vaccines, serums or drugs, have gained paramount significance. A recent writer has reëchoed a widespread belief by stating that beyond possible doubt food, good food, properly chosen, properly prepared and eaten in cheerful surroundings is our sheet anchor in this disease. Yet a survey of current proposals reveals widely divergent views as to how the tuberculous may best be nourished. As if overwhelmed by the thought of consumption, some clinicians have advised an ultraliberal intake of food for the patients almost regardless of the digestive disturbances which ill considered dietary measures may readily provoke. It is related that Debove, having discovered by accident not only that gastric lavage arrested the vomiting of phthisical patients but also that food introduced through a tube could be retained and digested, proceeded to disregard the anorexia of tuberculous patients, and fed them with extreme liberality. A system of superalimentation involving the use of literally enormous, concentrated diets found considerable vogue for some time until a reaction set in against it. Other vagaries of treatment concerned the proportion of protein to be included in the diet. Again, fats, particularly cod liver oil and egg yolk, claimed prominence in the directions to the afflicted. Summarizing the practice in nearly a hundred leading sanatoriums of the world in 1908, Irving Fisher stated that the total calories fed ranged from a maximum of 5500 to a minimum of 2140, the intake of protein varying from 60 to 90 grams a day. The study of metabolism has meanwhile advanced to a stage which makes it possible to ascertain with scientific accuracy whether undue demands for energy are made on the body during the progress of tuberculosis. Calorimetric investigations of the metabolism in fever have left no doubt as to the large toll which this abnormal condition levies on the body's store of nutriment. As a consequence the dietetic treatment, notably in the case of typhoid fever and other conditions has been beneficently modified in the direction of liberality. It is high time that an equally rigorous analysis be applied to metabolism in tuberculosis, so that the physician may be intelligently guided in the prescription of suitable diets for his patients. Thanks to the contributions by McCann and Barr from the Russell Sage Institute of Pathology at Bellevue Hospital, New York City, some dependable facts are at length available. From these it appears that the basal metabolism of tuberculous patients may be normal or slightly above that of normal men of the same size.

Thus, in ten cases, the variation from the average normal was from minus 3 to plus 15 per cent. Further increases in metabolism occur with a rise of body temperature. These increases are not large. Thus, one case is reported in which the temperature rose 1°C. during two hours, without a chill. The heat production of the second hour was only two calories greater than that of the first hour. With a rectal temperature of 104° F. (40°C.) the metabolism may be 30 per cent above the average normal. The basal heat production in tuberculosis may be less than the normal for the same patient when in health; in other words, the loss in weight may be accompanied by a reduction in metabolism which more than compensates for the tendency to increase caused by the disease. One would expect some toxic destruction of protein in any febrile disease. At most, however, it is not large in tuberculosis. McCann and Barr venture to believe that many febrile tuberculous patients may be kept in nitrogen balance on diets containing from 60 to 70 grams of protein each day. This amount is much less than Voit's standard allowance (118 grams) for normal men, though somewhat greater than the normal minima of Chittenden and of Sherman (from 35 to 45 grams). It is much less than is fed to patients in many of the sanatoriums for tuberculosis. Consequently, forced feeding and high protein diets are unnecessary if not actually harmful in the active stages of pulmonary disease. In fact, the increased metabolism necessitated by overliberal food intakes leads to an increment of respiratory activity at a time when pulmonary rest is quite as much indicated as is muscular rest. In furnishing specific data, the New York investigators conclude that during periods of activity of a pulmonary tuberculosis the diet need not contain more than 500 calories above the basal requirement (from 2000 to 2500 calories), nor more than 60 grams of protein. The object of such a diet is to maintain the respiratory activity at the lowest level compatible with the maintenance of nitrogen equilibrium. There are losses of protein in the sputum, but according to Lanz they are not likely to exceed 7 grams a day. Muscular work, of course, calls for an added supply of energy. Accordingly, when the activity of the disease has subsided, the total calories in the diet should be raised to meet the requirements of the patient as his muscular activity increases. On the basis of these findings it should not be difficult to epitomize the dietotherapy of tuberculosis more successfully than ever before.—*Editorial, J. Am. M. Ass., February 26, 1921, lxxvi*, 592.

Misleading Beliefs Regarding Pulmonary Tuberculosis.—The first of these beliefs concerns râles as an evidence of active or unhealed pulmonary tuberculosis. They do not call for special treatment unless there is other evidence of active disease. If there is no evidence of tuberculous toxemia such as increased afternoon temperature, rapid pulse, cough with expectoration and loss of weight and strength, then the râles indicate only what has been and not what at the time exists. It is not an unusual occurrence to observe a patient who has for many months lost all his symptoms, presenting every evidence of perfect health and able to pursue his usual duties, still showing râles over the area of the localized disease and these râles may persist for months or even years. Conclusions: 1. Râles alone do not prove active tuberculosis and may remain an indefinite time after the lesion has healed. 2. When tubercle bacilli have been demonstrated in the sputum it has been generally considered that the carrier is actively tuberculous and should be placed under active treatment. It has been found that certain healthy persons, when from one cause or another they have had their sputum examined, have shown tubercle bacilli. Why should not there be tubercle bacilli carriers as well as typhoid and diphtheria carriers? Tubercle bacilli in the sputum with no other symptoms does not mean active tuberculosis. One may have them for years without disease. 3. There is still too much dependence placed upon the detection of definite physical signs, the finding of tubercle bacilli in the sputum and the result of the X-ray examination in making an early diagnosis. If symptoms of toxemia are present it is unmistakable evidence that active tuberculous infection exists. An early diagnosis must as a rule be made upon the symptoms of tuberculous toxemia; physical signs may or may not be present. 4. Undue fear of the communicability of pulmonary tuberculosis from one adult to another is unwarranted in the present state of our knowledge and there is much evidence for the belief that it never occurs. 5. The open air treatment must be applied with judgment and climate alone will not cure a tuberculous individual. 6. In the treatment of pulmonary tuberculosis there is a time for exercise as well as rest, but one must wisely choose the time for the former and skilfully direct it.—*Some Misleading Beliefs Regarding Pulmonary Tuberculosis, E. O. Otis, Milit. Surgeon, February, 1921, xlviii, 159.*

Latent Pulmonary Tuberculosis in Its Disguises.—The term latent pulmonary

tuberculosis is used for those cases of tuberculosis of the lungs in which there is no cough. The symptoms the patients complain of may be divided into the nervous, autonomic, gastrointestinal, asthenic, rheumatic, dermatological, cardiac, menstrual, and general groups. The author has never seen a latent case in either of the sanatoria with which he has been connected. An analysis of 75 of his private patients exhibiting pulmonary consolidation without suffering from cough is made: 24 were males and 51 females; 4 were ten years of age or younger, 13 between eleven and twenty, 29 between twenty-one and thirty, 16 between thirty-one and fifty, 7 between forty-one and fifty; the age was not recorded in the rest. One was in the far advanced stage, the rest were incipient or first stage cases. Thirty-two gave a family history of tuberculosis. Sixty-three of the patients complained of nervous symptoms, 52 of pains, 41 of autonomic phenomena, 35 of gastrointestinal disturbances, 28 of menstrual disorders, 16 of skin eruptions, and 67 of asthenic, cardiac, general and other symptoms. The chief nervous symptoms were nervousness, depression, insomnia, irritability, excitability, restlessness, tremors, hysteria, twitching, nervous prostration, disagreeableness, mental tire, and nausea or vomiting accompanying headache. Of the pains complained of, the most frequent were headache, backache, pain in the legs, precordium, chest, back of the neck, abdomen, sacroiliac joint, shoulder blade, supraorbital region, arm and shoulder. The autonomic phenomena most frequently met with were dermographia, pallor, tricolored finger nails, sweating exclusive of night sweats, flushing, showing of sclera above or below the cornea on opening the eyes widely, subjective sensation of cold, migraine, bleedings exclusive of hemoptysis, urticaria, the leaving of a black line when a silver probe is drawn across the face, showing of sclera normally above or below the cornea, feeling worse in hot weather and better in cold weather, and nosebleed and angioneurotic edema. The chief gastrointestinal symptoms complained of were nausea, eructation, vomiting, epigastric pressure, smothering, lump, weight or heaviness, epigastric pain, pyrosis, abdominal pain, sour taste, nervous indigestion, heartburn and distention. The most common of the menstrual and pelvic disorders were dysmenorrhea, exacerbation of other symptoms during the menstrual period, irregular menstruation and menorrhagia. Of the symptoms classed as general those most frequently complained of were weakness, tendency to tire easily, being always tired, malaise, dyspnea and palpitation on exertion, vertigo, anorexia, loss of weight, failure to gain weight, dyspnea, listlessness, languor, lack of ambition, constipation, exhaustion, sore throat, hemoptysis, lessened appetite, fainting and frequent urination. As a rule the symptoms described do not subside on symtomatic or ordinary treatment. Tuberculin is seldom of value. Proper hygiene, fresh air, good food, sufficient rest, proper exercise, hydrotherapy, and Bier's hyperemia of the lungs and bone marrow are always indicated; some cases retain their symptoms in spite of every method of treatment. The therapeutic agents that seemed to be of most benefit were iodoform in doses of one-eighth grain, increased gradually to a grain, iron, arsenic, strychnine, picrotoxin, digitalis, valerian, and calcium glycerophosphate or lactophosphate. Many of the symptoms mentioned doubtless have no connection with the tuberculous process. It is possible that some may be produced as a direct result of the body's fight against the tubercle bacillus and its toxins.—*Latent Pulmonary Tuberculosis in Its Various Disguises, M. Solis Cohen, N. York M. J., January 22, 1921, cxiii, 144.*

Chronic Pulmonary Tuberculosis with Few Symptoms.—Four cases are described in which physical signs were meagre, but in which the X-ray showed disseminated pulmonary foci. The usual symptoms were mostly lacking. Dyspnea on exertion was usually present, fever was slight or absent and tubercle bacilli appeared late. The course of the disease is chronic, the prognosis is bad.—*Zur Kenntnis der symptomarmen, wahrscheinlich auf dem Blutwege enstandenen Formen der chronischen Lungentuberkulose (zerstreute, kleinherdförmige Tuberkulose), G. Bolle, Ztschr. f. Tuberk., October, 1920, xxxiii, 32.*

Symptoms vs. Physical Signs in Early Diagnosis.—Brown has shown from his experience at Trudeau that out of twenty-eight per cent of their patients, which were incipient, came 69 per cent of their apparent cures. Gilbert is convinced from a study of the literature and of his own records that the family focus is the most potent one in the dissemination of infection. If we go very carefully into the family history of our patients, we will find in a large proportion of them that some relative or other, who has lived in close contact with the patient in childhood or adolescence, had chronic bronchitis, a throat cough, or a stomach cough. Gilbert went to the trouble of tracing these contacts and was surprised how almost uniformly they proved to have old fibroid tuberculosis, not very virulent, but ample for the purpose of infecting young persons in the

family. Physical signs are usually overemphasized and not enough weight is attached to symptoms in early diagnosis.—*Symptoms vs. Physical Signs in the Early Diagnosis of Pulmonary Tuberculosis, O. M. Gilbert, Med. Herald, January, 1921, xl, 25.*

Tenderness Over Tuberculous Apex.—Sabourin, in 1910, drew attention to the value of examining with the finger tip for circumscribed tenderness along the intercostal spaces anteriorly, at the bottom of the supraclavicular triangle, and in the supraspinous fossa; where the pain on pressure is elicited the patient withdraws his shoulder or exhibits a localized muscular contraction. Pressure should be made gently, gradually, and systematically, so as to cover every portion of the suspected areas. The tenderness on the affected side contrasts with the lack of sensitiveness on the sound side. The presence of actual tenderness distinguishes active from quiescent tuberculous lesions. The author, examining a large number of cases, found the local tenderness constantly present in tuberculous patients and absent in others. In 192 consumptives with tubercle bacilli in the sputum tenderness at the midpoint of a line drawn from the base of the neck to the acromion was always present, being especially marked during acute exacerbations of the disease, and less pronounced at other times, yet persisting for a considerable period, even after disappearance of the auscultatory signs of the disease. In four patients with cavities, who had recovered under sanatorium treatment and whose sputum was free from bacilli, tenderness was absent. In one case in which a patient had been worried because of loss of weight and had a tender point the physician, finding auscultation negative, ascribed the tenderness to a neuropathic state and ordered hydrotherapy; a week later, a copious hemorrhage, with fever and definite signs of tuberculosis showed the true condition of affairs, which had already been manifested in the tender point. Tenderness in the intercostal spaces and in the axilla was elicited in one half of all cases and tenderness above the clavicle in four-fifths of the cases. Besides revealing active lesions, the tender points indicate recovery when they disappear—especially when they do not return with intercurrent febrile disturbances—and constitute the best guide available to the physician for regulating the treatment and prolonging, reducing, or stopping the rest cure. Coupled with supraclavicular adenitis, the points of tenderness assist in the making of an early diagnosis of tuberculosis.—*La douleur locale à la pression du doigt et les adenites sous-claviculaire chez les tuberculeux, G. H. Lemoine, Bull. d. l'Acad. d. Med., November 30, 1920, lxxxiv, 269.*

Apical Respiratory Insufficiency and the Diagnosis of Pulmonary Tuberculosis in Adults.—As Sergent of Paris has recently remarked, there exists quite a large category of pseudo-phthisical subjects. He calls these by the apt term of cases of respiratory insufficiency. The diagnosis is especially necessary when respiratory insufficiency, instead of being complete, is exclusively confined to the apices. In these circumstances, the localization of the physical signs, becoming added to some somatic characters and a few general symptoms, should the examination be insufficiently methodical, there may result a mistaken diagnosis. Cases of this kind are fairly frequent in practice and it is therefore essential to insist upon the symptomatic characters which specify this syndrome. The syndrome is invariably bilateral and purely functional, whereas respiratory insufficiencies, the result of lesions, are usually confined to one lung. The condition is particularly met with in adults. The physical syndrome is the consequence of a decreased ventilation of the apices and makes itself manifest essentially by a decrease of sonority, vocal vibrations, vesicular murmur, amplitude of the respiratory movements, the absence of adventitious sounds, rough breathing, and souffle. Besides these signs, the various means of exploration concur in showing that the apices, although in a state of functional respiratory insufficiency, preserve the possibility of becoming momentarily sufficient, and this is precisely because no lesion exists that can hinder their ventilation and expansion. The measures of functional capacity—spirometry, plessimetry—estimate the degree of the insufficiency. To this functional disturbance more or less accentuated general symptoms become added, which are just the ones that lead *a priori* to a suspicion that the condition may be tuberculosis, because of the insufficiency of weight and musculature, general hypotony, anemia and anhematosis, all of which attain a much more accentuated degree when total respiratory insufficiency complicates the insufficiency at first confined to the apices. The majority of these patients are young, but the syndrome may sometimes be met with in subjects over forty years of age. Almost all have had adenoids in the past and have been operated on some time previously, or else the nasal fossæ are impermeable so that they have lost the habit of breathing normally and no longer ventilate the lungs properly. Now, if this insufficient ventilation is at first confined to the apices it is because the

apex is the region of the lung which in normal condition is the least ventilated. The primary cause of this diminished ventilation of the apices, according to Sergent, should be looked for in insufficiency of movement of the diaphragm. In cases of injury of the base of the thorax, especially those of warfare, one can very distinctly see with the fluoroscope that the apex—considering only intact apices—has a lesser transparency and expansion although preserving the possibility of offering the characters of a well ventilated apex when the patient is made to cough. On the other hand, in patients with nasal obstruction the diaphragm moves poorly. Therefore the mechanism of the syndrome of respiratory insufficiency of the apices, which is above all met with in subjects offering inadequate nasal respiration, is clearly explained, and it can readily be conceived why, if the diaphragmatic disturbance becomes extreme, total pulmonary insufficiency becomes installed, overshadowing the apical insufficiency which becomes only a localization. The diagnosis of this syndrome is fairly easy when it is well known. Its bilaterality prevents confusion with insufficiencies due to apical lesions and bilateral apical sclerosis is practically the only morbid process for which it might be mistaken. But the physical signs and X-ray findings are very different in the latter process. The absence of adventitious sounds and the perfect regularity of the respiratory sounds in both apices will prevent any diagnostic mistake. The prognosis depends upon the treatment employed. If this condition is allowed to continue it will inevitably react upon the general health because the somatic characters of the process are rather the effect than the cause of the functional disturbance. The treatment consists of respiratory reëducation and gymnastics methodically and progressively carried out.—*Editorial, Med. Rec., February 12, 1921, xcix, 271.*

Presumption of Tuberculosis From External Stigmata.—Queyrat interests himself in the old-fashioned methods of diagnosis from deduction. Hs enumerates the slenderness of the long bones, the defective development of the musculature and especially that of the thorax, where there is actually atrophy of some of the muscles, which appears to result from the presence of a focus of disease in the apex of the affected side. However, in the case of these petty signs it is not always possible to distinguish between the candidate for phthisis and the early victim. Atrophy of the trapezius, great pectoral, etc., is one of the presumptions that a focus is already present. Percussion myoidema of phthisiologists is an induced phenomenon in the same muscles. But it should be borne in mind that myoidema is common to cachexias and is without specific significance. Pectoral myoidema (or myedema) was extremely common in an epidemic of cholera in 1885. It is common also in cancerous cachexia. Winglike scapulæ are due to atrophy of the serratus magnus and is seen in candidates and even in those who do not seem predisposed to the disease. Tall and slender subjects of the so called "poplar" type are to be classed as candidates. The author mentions in passing the facies amabilis of old clinicians—with its long oval, its mobility, its thick eyebrows, long lashes, and bluish sclerotics. The eyes are especially languishing and beautiful. Chlorotuberculosis is a special form, with various hypoplasias, including those of the genitals, which is said to be readily curable. Of other petty signs the author enumerates thickish skin, lively blush on the cheeks, thick lips, wide nose, chilblains, fissures between the cheeks and lobule of the ears, deceptive appearance in plump subjects because of good nutrition, high color, and clear eyes. Hippocrates, who presumably lived among a population containing a large percentage of dark-complexioned peoples, laid emphasis on red hair, clear skin, and blue eyes as predisposing to phthisis. But it is not so much the exclusively rufous subject who seems to invite the disease, for brunettes of the erythic type suffer equally with the blondes and rufous. That is, in tuberculous subjects we often find a hybrid between brunette and red, as when black head hair is associated with red beard or pubic hair. Hirsute subjects, when this trait is not associated with the cave man proportions, are very suggestive of phthisis. This is shown in an old Latin maxim—a hairy man is either strong or consumptive. Rather suspicious in girls are plump mammæ with general lack of adipose. Smallpox scars in a subject suggest the old dictum that the victim of variola very often dies of or with tuberculosis, as shown by autopsy findings. Scars of old scrofula, scar keloid, and perhaps spontaneous keloid are all suggestive of tuberculosis, past or future. The author concludes with a long parade of the so called paratuberculous dermatoses which have gradually increased in numbers to such an extent that they are often the only evidence which points to the disease.—*Editorial, Med. Rec., January 8, 1921, xcix, 61.*

The Drooping Shoulder Sign.—Of the last 50 cases seen by Rivers there has been present in 25 cases a sign not mentioned in British text books. On the affected side or (generally) the side of more extensive or

older disease, the points of the shoulder and the nipple are lower than on the other side. The nipple is also smaller and seems to lie further back. Behind, the scapula is lower, its inferior angle may reach three inches below that of its fellow, and is at a different distance from the spine, usually nearer to it. Muscular atrophy also is noticeable, a little of the pectorals, but more of the upper part of the trapezius. The superior border of that muscle is flattened, wasted, hollowed out so that, as compared with the opposite side, much less of it shows above the clavicle when viewed from the front and above the spine of the scapula when viewed from behind. The sign is more marked in men and occurs in a rather large proportion of juvenile hilum cases. It occurs in very nearly half of the third stage cases, in nearly half of the first stage and in about a quarter of the second stage cases. The author saw it develop in the course of a few weeks. The sign is almost certainly tuberculotoxic in origin. It is clear, objective and definite, and of great practical value, especially in children's phthisis, and in chronic bronchitis, complicated by a small patch of tubercle.—*The Drooping Shoulder Sign of Phthisis, W. C. Rivers, Brit. M. J., January 22, 1921, 120.*

Significance of Slight Fever in the Tuberculous.—When the rectal temperature shows a rise to 37.7° or 38°C. (100.4° F.) after an hour's walk, this suggests suspicion that something is wrong but it by no means testifies to tuberculosis, not even when the temperature goes still higher than this. Individual habits must also be considered; a letter carrier would react differently from an office clerk. Half an hour of repose after the test exercise should bring the temperature down to within three-tenths of a degree Centigrade of what it was before the walk. [Three-tenths of a degree Centigrade is nearly six-tenths of a degree Fahrenheit.] If the temperature takes longer than this to decline, it is strongly suspicious of serious pathological conditions, and tuberculosis is usually responsible. On the other hand, the lack of a temperature reaction is not an infallible sign that conditions are normal. When the thermal reaction to exercise is approximately normal in the tuberculous, this testifies that the focus is more or less healed and isolated. Abnormal fluctuations in the temperature during repose, even if the rise is very slight, demand strict enforcement of repose. This point is the one most often neglected; either the rise is overlooked or is regarded as too slight to be heeded. The author has seen hundreds of patients die from the progress of their disease because the slight rises in temperature during the early, curable stage had not been heeded. Physicians must realize that it is just as wrong to allow patients with even a slight rise in temperature to go for a walk or to work, as for a surgeon or obstetrician to neglect asepsis. The author records the temperature every two hours at first to ascertain the individual type, also the monthly type in women. The temperature is taken several times a day in the febrile and from once to three times in the afebrile, then gradually only once in two, three or seven days, interposing an occasional day in which the temperature is taken oftener. These conclusions are drawn from Voornveld's own observation and experience, but are sustained by literature which he cites.—*Die Bedeutung leichter Temperatursteigerung bei Lungentuberkulose, H. J. A. van Voornveld, Schweiz. med. Wchnschr., June 24 & July 1, 1920, 1, 539 & 567.*

Statistics of the Pirquet Reaction.—The figures reported were collected from the records of the Children's Hospital, Philadelphia, for the past ten years. The technique employed was the regulation denudation with the Pirquet borer and immediate application of one drop of pure tuberculin (O. T.). Twenty-seven patients were found to be tuberculous at autopsy. Of these, 16 had given positive and 11 negative reactions. Apart from the fact that only one retest was done in 10 of the 11 nonreacting cases, the high percentage of negative results must have been dependent in large part upon the stage of the disease at the time the test was made. Of the 11 negative results, 8 were obtained in children who died within two weeks. Another patient, not included in the 27, gave a positive Pirquet reaction and was diagnosed pulmonary tuberculosis antemortem, but no lesions of tuberculosis were demonstrated at autopsy. This result cannot be accepted as an authentic instance of lack of specificity of the tuberculin reaction. The autopsy was done by one of the residents, presumably during an emergency and histological examinations were not made. Of 185 retested children 6.5 per cent were tuberculin sensitive only on the second test. The difference in positive results, where the intracutaneous method is used in retesting, as compared with a second Pirquet, hardly seems great enough to compensate for the much more complicated technique of the former method. From a comparison of the clinical and postmortem diagnoses certain facts may be emphasized: 1. The clinical designation of generalized tuberculosis with meningitis depends upon the terminal meningeal infection. 2. Generalized tuberculosis, without

meningitis, usually is diagnosed as a pulmonary disease, because of the extent of the pulmonary involvement. As the tuberculin test is of clinical value only in the first years of life, and sputum is difficult or impossible to obtain, where the involvement of the lung consists chiefly of miliary tubercles, there is some justification for error. 3. The distinction between infantile atrophy, chronic gastroenteritis and nontuberculous bronchopneumonia on the one hand, and pulmonary tuberculosis on the other, may, at times, be extremely difficult in the presence of a negative tuberculin test. Repetition of the latter should reduce the percentage of error. 4. Unless the history and course be typical of the type, the possibility of spondylitis should always be considered in the differential diagnosis of a spinal paralysis. This series demonstrates the high percentage of tuberculous infection and the comparatively low incidence of recognizable clinical tuberculosis in childhood. Additional evidence is adduced to prove that a positive tuberculin reaction does not occur in the absence of tuberculous infection. There should be at least one repetition of the tuberculin test if the first was negative.—*Statistics of the von Pirquet Reaction, J. C. Gittings and J. D. Donnelly, Arch. Pediat., February, 1921, xxxviii, 78.*

Diagnostic Value of Intracutaneous Injection of Patient's Own Urine.—From a study of forty children the authors cannot confirm the statements of Wildbolz in every particular but think the method is worth using. In order to form a correct judgment in regard to the relationship between allergy in the individual and the reaction produced by the tuberculin-like substance in the urine, they made control tests in the case of most of the children. In one group of children they injected the urine of other, nontuberculous patients who had shown no reaction after the injection of their own urine. They also applied the urine test to other anergic and allergic children, using the urine of markedly tuberculous children, so that a large percentage of the children, some of whom were known to be allergic and some of whom reacted positively to their own urine, were also tested as to their behavior toward the urine of other children. All the children with a negative Pirquet reaction and without a frank tuberculous focus were found, on examination, not to have the tuberculin-like substance in their urine. Children who reacted to tuberculin were injected with the urine of these children and likewise showed no reaction. When these nontuberculous children were injected with the urine of frankly tuberculous patients they likewise gave no positive reaction. They regard the behavior of children so examined as furnishing proof of the specificity of the urine reaction. Further investigation, however, showed that the urine reaction of Wildbolz does not furnish an absolute criterion in regard to the activity of a tuberculous focus.—*Eigenharnreaktion nach Wildbolz bei tuberkulösen Kindern, Eliasberg & Schiff, Monatsschr. f. Kinderheilk, October, 1920, xix, 5.*

Diagnostic Artificial Pneumothorax.—Fishberg reports three cases of pulmonary neoplasm in which he induced artificial pneumothorax for the purpose of settling the diagnosis. In view of the harmlessness of the procedure, it appears that it should be utilized for diagnostic purposes in all doubtful cases. While most tumors can be diagnosed merely by a careful study of the history and physical signs of the cases, this procedure of diagnostic pneumothorax will in many cases, especially those with pleural effusions, clear up the diagnosis promptly and decisively. It is doubtful whether it is advisable to induce a pneumothorax in cases with aneurysm.—*Discernment of Intrathoracic Neoplasms by Aid of Diagnostic Pneumothorax, M. Fishberg, J. Am. M. Ass., February 26, 1921, lxxvi, 581.*

An Early Diagnostic Sign in Basilar Meningitis.—This diagnostic sign of early meningitis is called a reflex strabismus. It is elicited by flexing the head on the chest. When this is done either a bilateral or unilateral strabismus develops which will last as long as the head is kept flexed and disappears as soon as the head is relaxed. In many cases the strabismus is accompanied by a retraction of the upper eyelids. A contraction of the pupils is also noticed in some cases. During a period of seven years of observation "reflex" strabismus was present in the early stages of almost every case that came under observation. In the late or paralytic stage flexion of the head fails to produce strabismus. By means of this sign one is able to make a diagnosis of basilar meningitis days before any other meningitic symptom appeared. The difficulty of making a positive diagnosis of tuberculous meningitis in the early stages of the disease is well known. In most cases onset is gradual, and the symptoms are vague and indefinite. There may be no other sign than those of vague digestive disturbance for days or weeks. The diagnosisis especially difficult in young infants since the yielding cranium keeps the intracranial pressure below the fatal limits and often weeks will pass before

definite signs appear.—*An Early Diagnostic Sign in Basilar Meningitis, D. Gingold, Arch. Pediat., January, 1920, xxxvii, 19.*

Chemical Examination of the Cerebrospinal Fluid in the Diagnosis of Tuberculous Meningitis.—A chemical examination of the cerebrospinal fluid may yield valuable results in cases in which the cell content of this fluid or the general clinical picture may prove misleading. Thus, in a child convalescing from whooping cough and seized suddenly with convulsions and other evidences of meningitis, lumbar puncture yielded a clear fluid with lymphocytosis, reduction of albumin, and a marked excess of sugar. Two days later, the fluid showed improvement and on the fourth day the fever and meningeal signs passed off. On the other hand, in a similar case of meningeal syndrome appearing during recovery from whooping cough, the cerebrospinal fluid showed, aside from lymphocytosis, an excess of albumin and absence of sugar. The child died, and postmortem examination showed tuberculous meningitis. Another child of eight years had fever, headache, vomiting, and constipation one week before admission to hospital. Examination revealed a positive Kernig, but normal reflexes and merely slight photophobia and headache. On lumbar puncture the fluid issued without pressure and after prolonged centrifugation yielded only one lymphocyte in ten microscopic fields. Chemical examination, however, revealed an excess of albumin and only traces of sugar. Similar results were obtained three and eight days later, and meanwhile distinct clinical evidences of meningitis appeared. At the fourth examination there was marked lymphocytosis; the child died the next day, and the autopsy showed tuberculous meningitis.—*De l'utilité de l'examen chimique du liquide cephalorachidien dans le diagnostic de la meningite tuberculeuse, G. Mouriquand & Morenas, Lyon Méd., December 10, 1920, cxxix, 990.*

Roentgenography of Obscure Bone Lesions.—In soft tissues it is known that the tubercle bacillus can duplicate the reaction of almost any type of pathogenic bacterium. In tuberculosis of bone, as in soft tissues, there may occur (1) exudative, fibrinous or puriform, (2) discrete proliferative lesions, and (3) a diffuse proliferative reaction, following the exudative, which is essentially tuberculous granulation tissue, with much or little caseation. In the latter instance, there may be new bone formation just as in the repair of pyogenic processes, at a time when destruction or resorption of bone is going on. The important lesson from the pathological study of this series of cases is the reminder that tuberculosis in bone may simulate any other infectious process in location and character of the lesion. Diagnosis from X-ray studies alone is therefore occasionally impossible and recourse must be had to other clinical evidence, and when possible to pathological examination.—*Roentgenographic Appearance, Diagnosis, and Pathology of Some Obscure Cases of Bone Lesions, R. W. Lovett and S. B. Wolbach, Surg., Gynec. and Obst., August, 1920, xxxi, 111.*

Tuberculosis of the Lachrymal Glands.—A survey of the literature and report of two cases from the Jena Eye Clinic is given. In both cases the glands were extirpated.—*Über Tuberkulose der Tränendrüse, W. Stenzler, Dissertation, Jena, 1919 (translated from Internat. Centralbl. f. d. ges. Tuberk. Forsch., August, 1920, xiv, 232).*

Primary Tuberculosis of the Thyroid.—Although the early history in the case was suspicious, tuberculosis had never before been diagnosed. Careful examination of the patient to this time had failed to show any active foci of tuberculosis elsewhere in the body. The history was negative, except for several attacks of tonsillitis and a discharging sinus over the thyroid in earlier life. This showed first at ten years of age and healed after draining for a year At about twelve years of age, it again discharged and continued to do so until the patient was fifteen, when it finally healed and gave no further trouble. About nine months before the authors saw the patient, there began an enlargement of the thyroid. There were no symptoms of hypothyroidism or hyperthyroidism, and the condition appeared to be a simple goitre. The gland was removed and was considered malignant. Gradually the clinical signs of myxedema appeared. The basal metabolism was — 23 per cent, and the patient was given 1 grain of thyroid extract three times daily. This was given four days, when the metabolism was — 6.3 per cent and — 8.4 per cent on successive days. At the end of a month's time the basal metabolism was + 6 per cent. The observation that basal metabolism was lowered before any signs of myxedema developed gives an added interest to metabolism readings in all cases of thyroid involvement, even though the case seems to be only simple goitre. The lowering of approximately 20 per cent in the basal metabolic rate, both before and after operation and treatment, is interpreted as showing practically entire lack of thyroid tissue in the gland at the time of the first examination.—*A Case of Tuberculosis Primary in the Thyroid, W. H. Rendleman and J. I. Marker, J. Am. M. Ass., January 29, 1921, lxxvi, 306.*

Conglomerate Tuberculosis of the Heart.—Tuberculosis of the myocardium is rare. Since 1885, 115 cases have appeared in the literature. The case reported is in a one and one-half year old child with widely disseminated tuberculosis and conglomerate tubercles of the right ventricle.—*Über einen Fall von Konglomerat-Tuberkulose des Herzens, W. Doermer, Dissertation, Jena, 1918, (translated from Internat. Centralbl. f. d. ges. Tuberk. Forsch., August, 1920, xiv, 241).*

Tuberculosis of Myocardium.—The patient had tachycardia, enlargement of the heart and an accentuated second sound in the pulmonic area. Later the heart sounds were both rapid and irregular. Two months before death he developed a temperature reaching 100° F. The urine had a slight amount of albumin. He had a history of syphilis, and the blood gave a positive Wassermann reaction. He became progressively worse, and died six months after admission to the hospital. Both auricles were extensively affected, especially the right one, where the wall was 1 inch thick, due to the caseous material. The tuberculous tissue projected into the auricle, though it did not penetrate the endocardium, and also projected slightly into the upper part of the ventricles. The myocardium near the apex of the heart showed invasion from tuberculous pericarditis.—*Case of Tuberculosis of Myocardium, W. W. Adamson, J. Pathol. & Bacteriol., December, 1920, xxiii, 399.*

Tuberculosis and Cancer of the Lung.—The author reports two cases of combined pulmonary tuberculosis and primary carcinoma of the lung. In both cases cancer developed in the presence of active tuberculosis. The first patient entered the hospital for advanced tuberculosis. Physical signs revealed abscesses at the right upper lobe. The patient was coughing up profuse purulent sputum containing acid-fast bacilli, and complained of excessive pain in the right side. During the course of the disease rather unusual symptoms developed. There was edema of the face; the veins of the chest, upper thorax, and right arm became distended. A diagnosis was made of obstruction to the superior vena cava. Autopsy findings showed the superior lobe of the right lung a cancerous mass containing many small tuberculous cavities which were almost obliterated by the cancerous ingrowth. Microscopic examination of the lung tissue showed epithelioma. The right pleura and mediastinal and cervical glands showed cancerous involvement and the superior vena cava was compressed by a mass of fibrocarcinomatous tissue. The second case was diagnosed at necropsy. The lung was filled by a caseating mass containing giant cells. Foci of definite malignancy were found in the bronchi. The alveolar spaces were also filled with large deeply stained cells containing prominent nuclei, many of which showed active cell division. Cancer secondary to old tuberculosis is perhaps not rare. The epithelium of the bronchi and alveolar spaces can undergo cell division and become malignant in the same way that the other tissues in the body undergo malignant changes. Letulle states that his two cases of primary cancer and tuberculosis are a much rarer condition than the association of a metastatic cancer and tuberculosis. Metastasis to the lung and pleura, either by emboli or by direct extension is quite common.—*Tuberculose pulmonaire et cancer primitif du poumon. M. Letulle, Presse Méd., August 7, 1920, xxviii, 537.*

Tumor Like Tuberculosis of the Heart.—A postmortem revealed an unusually large conglomerate tubercle in the left auricle. The disease may have had its origin in a tuberculous bronchial lymph node. Another case of chronic myocardial tuberculosis of nodular type is described.—*Tumorartige Tuberkulose des Herzens, A. Binder, (Ztschr. f. Herz-u. Gefässkrankh., 1920, xii, no. 1) Zentralbl. f. innere Med., 1920, xli, 462.*

Tuberculosis of Meckel's Diverticulum.—A case of tuberculosis of Meckel's diverticulum observed at the Pathological Institute at Bonn is described; the disease also involved the serosa with small miliary nodules. Tuberculous involvement of the lungs and intestines was associated.—*Tuberkulose des Meckel'schen Divertikels, T. Wirtz, (Inaug. Diss., Bonn, 1920.), Zentralbl. f. Chir., 1920, xlvii, 933.*

Pulmonary Silicosis.—The article deals with workers engaged in the following industries: manufacture of silica bricks, and silica flour milling, scythe stone-making, lead mining, quarrying, and stone-dressing. Under pathogenesis, air pollution by dust, the essential fineness of dangerous silica dust and the specific qualities of silica as a disease producer are discussed. The gross characters and the microscopic structure of the silicotic lung as well as incineration results are gone into. The symptoms vary in nature and time of onset; among the early ones are dyspnea, cough, and hemoptysis. Five typical instances are then described. After a thorough discussion of the prognosis the

following conclusions are drawn: 1. Silicosis is caused by the inhalation of minute particles of dust of high silica content. 2. The finest particles are most directly injurious as they reach the lymphatic channels of the lung producing progressive fibrosis; the dust is most dangerous at the beginning of its generation, before damping or agglutination has occurred. 3. The disease produced can be diagnosed from physical signs—in some cases before the patient has become aware of definite symptoms. 4. Silicosis predisposes to tuberculosis, as a result of the changes produced in the lung. It may, however, exist and prove fatal without any definite evidence of a superadded tuberculous infection. 5. The only means of combating the disease is by prophylaxis—in preventing the generation of dust at its source, in obviating its inhalation by the use of masks, and in excluding any affected persons when the condition becomes recognizable. 6. The prophylactic measures should be carried out in all industries where the inhalation of dust of high silica content is a contingent danger.—*A Study of Pulmonary Silicosis, E. L. Middleton, J. Industr. Hyg., March, 1921, 11, 433.*

Secondary Pulmonary Hypertrophic Osteoarthropathy.—The patient described developed pathologic changes in the extremities as a result of a chronic fibrous pulmonary tuberculosis. He had swelling of the distal extremities of all the limbs, most marked in the legs and feet. The swelling was due to three conditions: (*a*) hyperemia, (*b*) fibrous tissue thickening of the subcutaneous tissue, and (*c*) ossifying periostitis of the long bones. He had (*a*) permanent globular enlargement or clubbing of the distal phalanges of the fingers and toes; (*b*) parrot-beak deformity of the nails of the toes and fingers; (*c*) subperiosteal deposit of bone along the shafts of the long bones of the extremities and (*d*) thickening of the tip of the nose and to a less marked degree of the malar regions. Many of these cases are overlooked because of lack of acquaintance with the definite group of symptoms and pathologic changes. In institutions in which lung lesions, such as bronchiectasis, chronic pleuritis, tuberculosis and abscesses of the lung, are numerous, this disease is seen frequently enough as a complication. In the average private and hospital practice, on the other hand, hypertrophic osteoarthropathy is very uncommon. Yet so characteristic are the evidences of this disease that, once a case is seen, the condition will always be readily recognized. —*Secondary Pulmonary Hypertrophic Osteo-Arthropathy: Report of a Case; S. Kleinberg, J. Am. M. Ass., February 12, 1921, lxxvi, 435.*

Surgical Tuberculosis.—Tuberculosis of the joints and bones should not be considered as purely local lesions. So called surgical tuberculosis is above all a medical disease. In the large majority the surgical tuberculosis is of hematogenous origin. The bacilli enter the mucous membranes and penetrate them without causing a local lesion. This explains the enlargement of the tracheobronchial and mesenteric lymph glands, when the pulmonary mucous membrane and the intestinal mucous membrane are the portals of entry. Cervical adenitis is due to mucocutaneous inoculation about the head. The infection, though often not tuberculous at the outset, may become so later. The enlarged gland in itself is not dangerous, but it is a menace to the organism, because it contains bacilli which at any time may become disseminated through the blood and may localize in the bones or joints. The cause of the setting free of the tubercle bacilli may be an attack of measles with bronchopneumonia, grippe or more rarely, scarlet fever. Tuberculous osteoarthritis may be preceded by pleurisy. This dissemination may be accompanied by fever, because simultaneously with the bacilli, toxins are put in circulation. In infants in whom tuberculosis tends to be generalized, one observes first a cutaneous nodule, later spina ventosa, osteitis of the os calcis, cold abscess of the knee, coxalgia and Pott's disease. While these manifestations do not appear at the same time, the localization of the bacilli occurs in the course of the same dissemination, but the more superficial and accessible the lesion, the sooner does it manifest itself.—*Les tuberculoses chirurgicales en général, A. Broca, Progr. Méd., 1920, lii, 565.*

Brown-Sequard's Syndrome in Pott's Disease.—A woman of forty-five, suffering from suboccipital Pott's disease, felt something crack in her neck while an orderly was placing her head on an X-ray plate. From that moment on, she could not move her head and her left arm and leg were completely paralyzed. On the other hand, neuralgic pains in the neck and face which had been very severe decreased a good deal. The head of the patient is inclined to the right and forward, the chin touching the sternum. In the nape of the neck just under the occiput and principally to the left of the median line, there is a very hard protuberance which makes the impression of a luxation of the atlanto-axoid articulation. The neurological examination reveals the following: 1. On the left a complete flaccid paralysis of the upper and the lower extremity, of the respiratory muscles and of the diaphragm; 2. on the right, a complete anesthe-

sia and analgesia from the foot to the neck, but leaving the trigeminal area intact. This typical Brown-Sequard syndrome lasted only two days, after which time the anesthesia remained limited to the right side while the paralysis affected all four extremities. The patient died. The autopsy showed an atlanto-axoid luxation, more to the left and, on the articular surfaces, granulations mixed with pus. The uppermost portion of the spinal cord showed a linear transverse fissure through its left half as if it had been cut across. The tissue was softened at that level.—*Syndrome de Brown-Séquard au cours d'un mal de Pott sous-occipital, C. Roubier, Progr. Méd., October 2, 1920, no. 40, 435.*

Erythema Nodosum and Tuberculosis.—The case observed and reported by Stokes supplies clinical evidence, though no conclusive proof, for the belief that erythema nodosum may in some cases be of tuberculous origin. The patient, a girl of nineteen years, came to the clinic complaining of an eruption over shins and knees, associated with severe rheumatism of one week's duration. She had been exposed to tuberculous infection. On examination the erythema nodosum failed to show the usual hemorrhagic changes. No focus of septic infection could be found. Under rest in bed and the administration of salicylates the patient improved. Twenty-two days after the first examination she developed symptoms of a fulminating tuberculous meningitis and died seven days later. Tubercle bacilli were found in the spinal fluid. Necropsy disclosed an extensive recent miliary tuberculosis involving all the viscera. The outstanding features of interest in this case are the absence of clinical evidence of tuberculosis when the patient presented herself with rheumatoid symptoms and erythema nodosum, the apparently exact correspondence of the onset of erythema nodosum with the time of generalization of the tuberculous infection, as estimated by the age of the tubercles, found at necropsy, and the complete absence both in life and at necropsy of the septic foci responsible for erythema nodosum of the streptococcal types.—*Erythema Nodosum and Tuberculosis. Report of a Case Terminating in Tuberculous Meningitis, With Necropsy, J. H. Stokes, Arch. Dermat. & Syphilol., January, 1921, iii, 29.*

Feeblemindedness and Tuberculosis.—The study of symptoms of tuberculosis teaches us more than the study of the bacillus of Koch. As bacteriology with all its splendid achievements put such emphasis on the cause, the effects were overlooked. Since feeblemindedness was in no immediate sense a cause of tuberculosis, it was scarcely considered. But in seeking effects of feeblemindedness, tuberculosis cannot be overlooked. Physical diseases generally have psychic effects. Some evidence has been produced that there is a definite group of cases of dementia precox in which tuberculosis may be considered a causative factor and possibly the causative factor. Mental symptoms of less severe nature, however, are far more frequent. Representative of mental diseases stands feeblemindedness. By means of the Binet-Simon test and its modifications, we can measure intelligence defect, and hence we can grade the feebleminded on a certain basis with a considerable degree of accuracy. These are the idiots, the imbeciles, the morons and the subnormals. The numerical frequency of the disease was estimated at from three to twenty per thousand before the war. The data from the draft board examinations disclosed the fact that over 5 per cent of all rejections were because of mental defect. In some states the rejection for feeblemindedness exceeded 10 per cent of all rejections. Many, if not most, of the social evils of the world arise upon a basis of feeblemindedness and among these effects tuberculosis along with syphilis must be to a certain extent definitely included. Squalor and want breed tuberculosis, poverty fosters its spread, feeblemindedness stands back of all these. The feebleminded mother bears feebleminded children, and more abundantly than normal. Crowding, poverty and filth are added. Feeblemindedness starts the prostitute's life; tuberculosis ends it.—*The Relation of Feeblemindedness and Tuberculosis, K. A. Menninger, J. Outdoor Life, September, 1920, xvii, 251.*

Tuberculosis of the Penis.—A case of chronic hyperplastic tuberculosis of the penis is described which was confined to the corpus cavernosum. The focus was entirely encapsulated. The source is supposed to be hematogenous.—*Über Tuberkulose des Penis, H. Thielmann, (Inaug. Diss., Bonn, 1920), Zentrabl. f. Chir., 1920, xlvii, 1026.*

Heminephrectomy of a Horseshoe Kidney for Tuberculosis.—The right half of a horseshoe kidney was found upon operation to be tuberculous with marked disintegration and distinct demarcation between the normal and the diseased side. The urinary findings were typical,—tubercle bacilli with blood and numerous leucocytes. The bladder and ureter on the right side were involved while the left side was normal. The patient died seven weeks after operation.—*Heminephrektomie bei Halbseitentuberkulose einer Hufeisenniere, G. Magnus, Zentrabl. f. Chir., 1920, xlvii, 76.*